COMPETITIVE SPORTS AND MORAL REASONING

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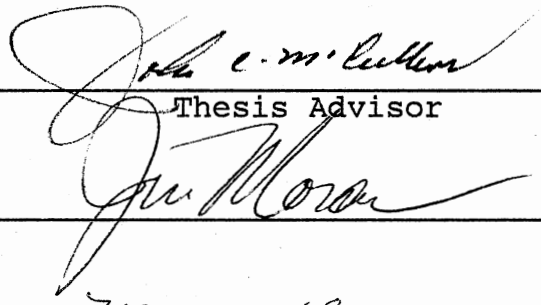

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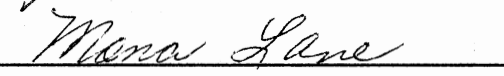

Dean of the Graduate College

PREFACE

The purpose of this study was to explore a possible regression in moral reasoning among athletes of two sports (football and baseball) during their season of play and their off-season. The rationale for this study was based on Kohlberg's (1969) stage theory of moral development and the research of Bredemeir & Shields (1984).

This thesis deviates from the format according to the Graduate College Style Manual (1987). The body of this thesis consists of a manuscript prepared for submission to a journal under the guidelines of the Publication Manual of the American Psychological Association (1983). Materials which are usually presented in the body of the thesis are contained in appendixes. The appendixes consist of a review of the literature, the research instrument, and raw data, and selected statistical analyses.

I would like to express my gratitude to all who aided in this study; there have been many. I wish to thank my committee members, Dr. James D. Moran III and Mona Lane for their assistance and guidance in this study. Special thanks to my major advisor, Dr. John C. McCullers, for his expert help and the constant encouragement he gave me through the years of this project.

I am grateful to Coach Gary Ward, OSU Baseball; Dale Roark, OSU Athletic Counseling Coordinator; Debbie and Carmen Tegano and the Athletic Counseling Center, University of Tennessee for their cooperation and assistance and their athletes who participated in this study. I am in their debt. I also appreciate the cooperation of the OSU Psychology Department for their help in providing the control subjects.

Many thanks go to Dona Braswell, Sherill Eggenschwiler and my Clark Elementary colleagues, whose encouragement gave me strength when I felt I'd given all my energy to my kindergarteners and had none left for the thesis.

All my warmest thanks to my family. To my parents, Mr. and Mrs. Steve Madar, for all their support and special thanks to my sister, Julie Silvey Middleton, for her invaluable typing assistance. I extend my love to my nieces, Lindsey Middleton and Alyssa Ward, and my nephew, Austin Ward, whose interest and enjoyment of sport as preschoolers lead me to research the sport literature and ultimately to my thesis topic.

Finally, I wish to extend my undying gratitude to the two people without whom I could never have completed this work. To my dearest friend, Paula Fine Balke, who was always there to provide me her love and her home in Stillwater. And to my husband, John, for his love, support, endurance and patience; this thesis is dedicated to him.

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Competitive Sports and Moral Reasoning

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This article is based on the Master's thesis research of the first author under the direction of the second author. Funds in support of the research were provided to the second author by the College of Home Economics, Oklahoma State University.

The authors wish to thank the Minnesota Moral Research Projects, The University of Minnesota, for permission to use Rest's Defining Issues Test. The authors also especially wish to thank Gary Ward, Head Baseball Coach, Oklahoma State University and Debbie Tegano, University of Tennessee, for their assistance and cooperation in obtaining subjects and all of the students who participated in this study.

Abstract

This research was conducted to explore a possible regression in moral reasoning among athletes who participated in a high-contact team sport (football) and a low-contact team sport (baseball) during both the regular playing season and the off-season period. The subjects were 72 undergraduate male students who comprised three groups: varsity baseball athletes, varsity football athletes, and a non-athlete control group. Each group was administered Rest's Defining Issues Test (DIT) twice. The athletes were administered the DIT during their on-season period and their off-season. There were no significant differences on the DIT among the three groups or between testings. However, all three groups scored dramatically lower than the DIT norms for college undergraduates. This finding, together with the fact that the control group subjects had considerable athletic involvement, suggests that sport participation may have influenced performance on the DIT.

Competitive Sports and Moral Reasoning

Sport has been hailed as an arena for developing character by teaching cooperation, self-control, personal sacrifice, risk-taking, fairness, and teamwork. Sport literature has predominately focused on social learning theory as a framework for studying the prosocial behavior of sport participants (Kleiber & Roberts, 1981), sportsmanship (Johnson, 1969; McAfee, 1955), and personality characteristics of athletes (Blanchard, 1945; McCloy, 1930; Magill & Ash, 1979). Articles aimed at physical educators and the physical education curriculum have focused on character building as an important objective and stressed techniques such as modeling, reinforcement of appropriate responses, and enhancing the game environment (Harris, Blankenship, Cawley, Crouse, Smith & Winfrey, 1982).

The moral development of athletes has begun to receive more attention from educators and researchers recently. Public concern about reports on the perceived widespread use of drugs by athletes, increasing numbers of collegiate programs being investigated by the NCAA for rule infractions, increasing fan and player violence, and the media's preoccupation with drug-related deaths of athletes have caused a re-examination of the popular belief that "sport builds character".

However, there have been few empirical studies on the "character" or moral growth of athletes. A cognitive-developmental approach to moral development has only recently been applied to the field of sport psychology (Bredemeir, 1983; Weiss & Bredemeir, 1983) and in sport programs designed to promote moral growth (Romance, Weiss & Bockoven, 1986; Bredemeir, Weiss, Shields & Shewchuk, 1986).

The research of Bredemeir and her associates has indicated that sport is an ambiguous context which may have a negative impact on moral growth (Bredemeir & Shields, 1984b). Studies have indicated that collegiate sport involvement is associated with levels of moral reasoning lower than college norms (Bredemeir & Shields, 1984a, 1984b; Hall, 1981).

Bredemeir and Shields theorize that "sport contexts are sufficiently distinct from everyday life contexts to elicit a situational adaptation of moral reasoning patterns about hypothetical dilemmas" (Bredemeir & Shields, 1984b). They contend that participating in sport involves a moral transformation in which egocentricity is redefined as appropriate. This results in "bracketed morality" within the sport setting or context, which is a temporary suspension of the usual moral obligations to consider others' needs and interests (Bredemeir & Shields, 1986a). Thus, a regression seen in the athlete's moral reasoning in sport dilemmas may be the result of the use of bracketed morality.

Bredemeir and Shields also suggest that "game reasoning" occurs within sport. "Game reasoning is a situationally operative morality that is bracketed within broader morality. While game reasoning is not lower in an ethical sense, its internal structure is regression-like, paralleling lower level morality in many respects" (Bredemeir & Shields, 1986b).

Bredemeir considers several aspects of the sport context that may contribute to the temporary adoption of an egocentric morality. In sport there is a concentration of decision-making power and moral responsibility in the roles of coaches and officials. Independent thinking on the part of the athlete is discouraged. Because split-second responses are so often required, athletes are taught to react, rather than reason. Depersonalization of opponents is encouraged and may contribute to a more egocentric and primitive attitude. She says that the sport realm provides socially legitimate opportunities to suspend the moral requirement that others' needs be given equal consideration to the interests of the self.

Research has shown that rewards can cause adverse effects on performance, motivation and behavior (Lepper & Greene, 1978) and moral reasoning (O'Malley, 1986). Money and rewards play a major role in professional sports and the emphasis on winning can be very strong even at the amateur level; regression in moral reasoning may then occur in athletes under these conditions.

The level of aggression permitted by a sport or the amount of physical contact involved in a particular sport may be a factor. Bredemeir theorizes that those sports that encourage the development of situationally specific moral reasoning tend to be interactive contact sports rather than noncontact sports such as swimming. Contact sports directly and frequently raise moral issues because of their inherent potential for injury (Bredemeir & Shields, 1985). Bredemeir, Weiss, Shields & Cooper (1986) found that boys' participation and interest in high contact sports and girls' participation in medium contact sports (the highest level of contact they reported) were positively correlated with less mature moral reasoning. Bredemeir and Shields were also concerned that "perhaps highly competitive sport experiences will eventually have a negative impact on participant's moral growth" (Bredemeir & Shields, 1985).

Further research was needed on the role of contact within highly competitive sports and whether the effects are general or confined to the period of actual sport engagement. The purpose of this study was to investigate a possible regression in moral reasoning among athletes who participate in the high-contact team sport of football and the low-contact team sport of baseball during both the regular playing season and the off-season period.

Method

Subjects

Subjects were drawn from two large state universities. Initial data were collected from 96 undergraduate male students. Of these, the data on 72 students were usable. The subjects comprised three natural groups: varsity baseball athletes (n=28), varsity football athletes (n=24), and a non-athlete control group (n=20). The control subjects did not participate in any varsity sports and were recruited from the introductory psychology course. The baseball players at the researcher's institution (A) were recruited through the Head Coach. The football players at University A were recruited through the athletic academic counselor; however, because of errors in administration of the instrument, no usable data were obtained. The football and baseball players at the second institution (B) were recruited through the athletic academic counselor. The data from the control group and the baseball group at University A were collected by the researcher and all other data was collected by staff members in the athletic counseling centers.

The subject's college classification ranged from freshman to senior. The baseball group consisted of equal numbers of freshmen, sophomores and juniors, plus a few seniors. The football group was predominately sophomores and juniors. The control group consisted largely of freshmen and sophomores. The small number of seniors in the

sample was due to the probability the seniors would have graduated before a second administration of the instrument would have been possible.

Instrument

The research of Kohlberg (1969) and Rest (1976) has asserted that moral reasoning is based in cognitive structures and has shown developmental trends from childhood through adulthood. Rest developed a standardized test for assessing these developmental trends - the Defining Issues Test. For the purpose of this study, Rest's Defining Issue's Test (DIT) (Rest, 1986) was used to measure moral reasoning. The DIT is a pencil and paper test that according to Rest (1976) assesses the subject's "grasp of different stages of moral reasoning". The DIT contains 6 moral dilemmas (the short form uses 3 dilemmas).

For this study, the short form of the DIT using the Heinz, Prisoner, and Newspaper dilemmas was used. The subject read a dilemma, then was asked to read 12 statements and use a 5-point rating scale to indicate how important each statement was in determining what should have been done in the dilemma. The issues statements are keyed to the stages of moral development. After rating the statements, the subject was asked to rank the 4 most important items from the set of 12 items. These rankings yielded stage scores which represented the relative amount of reasoning used at each stage.

The DIT was chosen because of ease of administration, objective scoring, and an extensive data base on the DIT as a measure of moral judgment.

Procedure and Design

The DIT was administered twice to each group of subjects. The DIT was administered to the athletes during their season of play and again during their off-season. The control group took the DIT twice at approximately the same time intervals as the athletes. At the first testing, the subjects were given the DIT and information about their college classification and career goal was collected. In the second session, the same short form of the DIT was given again and information collected on the subject's participation in high school and college sports.

The DIT was group-administered to the athletes in rooms regularly used for team meetings and academic testing and counseling. The DIT was group-administered to the control group in their regular classroom.

The subjects were asked to refrain from discussing the DIT between administrations and were assured that their scores would remain confidential. The control group received extra credit points for their participation; the athletes received no compensation.

Scoring

The DIT data was scored for stage scores, "M" scores, and "P" scores using the standard procedure outlined in the manual (Rest, 1986). The DIT yields scores for each subject

at stages 2, 3, 4, 5A, 5B, and 6. In this study, the predominant stage score of the subject was used for data analysis and called the "S" score.

The score that is most often used in DIT research is the "P" index. The P score is the percentage of the subject's moral reasoning scored at stages 5 and 6 (principled considerations). A review of several studies by Davidson and Robbins (1978) states that a test-retest reliabilities for the P score are in the high .70's or .80's.

The DIT yields a response reliability check (the "M" score). This is used to identify a "subject's tendency to endorse statements for their pretentiousness rather than their meaning" (Rest, 1986). Rest recommends that subject's questionnaires whose M score on the short form exceeds 4 or more, be eliminated from the sample.

Results

Several types of data were collected in this study. Session 1 yielded data about the subject's career goal and moral reasoning on the DIT. In Session 2, data were collected on the subject's high school and college sport participation and moral reasoning on the DIT. The results for each type of data are reported by group.

Career Choice

The baseball players from University A (n=13) almost unanimously chose sport careers (one was undecided). Examples of a sport career included playing professional

baseball, coaching, sports management, etc. The University A baseball program is consistently ranked at the top of national college baseball polls. During the years of the 1980's, this University's baseball team won the conference title 8 times, the Regional title 7 times, and had 7 College World Series appearances. Therefore, University A players had high expectations for their college baseball careers and expected to play professional ball or get a job in the sports field.

University B's baseball program did not have a similar tradition. The baseball players (n=15) did not have high expectations of a professional baseball career, and only 7 subjects chose a sport career.

University B has a strong football tradition. Its teams are regularly successful within a highly competitive Division 1 conference. Their games are often nationally televised and the team traditionally participates in post-season bowl games. However, the football subjects (n=24) were not predominately sport-career oriented. Only 6 players chose sport careers; 18 players chose non-sport careers.

None of the control group (n=20) chose a sport career. However, the control group was not a totally non-sport orientated group as will be seen by the results of their sport participation.

Sport Participation

Data were collected on each subject's participation in high school and college (both varsity and intramural). The results indicated that baseball players (mean = 5.679 years, SD = 2.127), had more years of varsity experience than football players (mean = 2.625 years, SD = 2.856) or the control group (mean = 3.500 years, SD = 1.850), but all groups had several years experience. Although the control group was recruited for non-athletic characteristics, the sample did have athletic (though non-varsity collegiate) experience. Only 3 of the 20 control subjects reported no sport participation. A typical control subject participated in two varsity high school sports and had earned several letters.

Moral Reasoning

Subjects were scored on the DIT for P, M, and S scores for Time 1 and Time 2 (P1, P2, etc.) as defined earlier. Means and standard deviations for the two baseball groups are presented in Table 1.

Insert Table 1 about here

Examination of Table 1 reveals that the two baseball groups were reasonably comparable. A series of t tests was used to compare the two baseball groups on P, M, and S scores on trials one and two. These tests (see Appendix D) revealed no significant differences on P1, M1, M2 and S1, t (26) < 1.00. On the variables P2 and S2, respectively, the

difference between groups was not significant but was greater than 1.00, t (26) = 1.18, p = .247, t = 1.72, p = .098. Although the difference between the two baseball groups approached significance on the S2 variable, only one of the differences was significant and so the two baseball groups were combined for the purpose of analysis.

The three groups (football, baseball and control) were analyzed and scores for the P, M, and S variables are presented in Table 2.

Insert Table 2 about here

One way analysis of variance of the DIT scores by groups on time 1 and time 2 are generally non-significant (see Appendix D). The only significant difference found was an interaction on P1, P2 by group, F (2,69) = 3.20, $p < .05$.

The P score is the principled convention score of moral reasoning and is the one of the most reported variables in moral research. According to Rest (1986) the norm for average P score for college age subjects is 42.3, SD = 13.2, range of most sample means = 37 - 46.

Discussion

The present data do not show a clear regression in moral reasoning among athletes when ball players are compared to control subjects; the three subject groups did not differ significantly between trials 1 and 2 on the DIT. As expected, the M score (the response reliability check) did not differ and seemed to suggest the data were valid and

the subjects took the task seriously. The S scores (dominant stage) did not significantly differ and seem to imply that Kohlberg's (1969) assertion that an individual cognitive stage does represent a "structured whole," an underlying organization of thought.

The athletes P scores did not significantly differ from the control group P scores and therefore would not support the hypothesis that sport may produce a detrimental effect on moral reasoning. The two athlete groups showed no significant difference on the P scores suggesting that the amount of contact within a sport is not a factor influencing moral reasoning.

The present data do, however, present an ambiguous result. The data on subject's sport participation showed that the control group was not a non-athletic group and, in fact, the control subjects had participated in non-varsity sports and had considerable varsity sport experience in high school. Perhaps the control group was actually a third group of athletes and did not represent a true random population of male undergraduates. Another context of comparison is between the P scores of the three groups and Rest's DIT norms. The present study does reveal lower moral reasoning levels than would be expected from Rest's DIT norms in all three groups of subjects. Since all three subject groups had extensive sport experience perhaps sport did produce a detrimental effect.

There was no significant difference between on-season and off-season performance on the DIT; Bredemeir and Shield's (1986) assertion that "bracketed morality" is a temporary suspension of everyday moral reasoning does not seem to be supported. If sport can produce regression in moral reasoning, these data imply a more permanent effect on moral reasoning.

This study suggests that competitive sport, whether contact or non-contact, can produce a detrimental effect on moral reasoning and that this effect is not a temporary one but is rather permanent in nature. However, more research on the effect of sport experience upon moral reasoning is needed before one can assert that sport can produce a detrimental effect on moral reasoning.

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Table 1

DIT Scores by Baseball Group

	Baseball A			Baseball B	
DIT Score	n	Mean	SD	n	Mean	SD
	13			15		
P1		25.91	12.12		25.55	16.54
P2		21.02	11.89		27.33	15.70
M1		2.31	2.25		1.74	1.98
M2		1.79	1.61		1.33	1.76
S1		3.85	.69		4.00	.66
S2		3.62	.65		4.00	.54

Table 2

DIT Scores by Group

	Baseball			Football			Control	
DIT Score	n	Mean	SD	n	Mean	SD	n	Mean	SD
	28			24			20		
P1		25.72	14.40		30.00	16.87		21.83	11.46
P2		24.40	14.18		27.09	12.34		28.51	16.67
M1		2.00	2.09		2.25	1.70		1.90	1.59
M2		1.55	1.68		2.50	1.87		2.05	2.35
S1		3.93	.66		4.17	.70		3.85	.67
S2		3.82	.61		3.92	.58		3.85	.81

APPENDICES

APPENDIX A

LITERATURE REVIEW

REVIEW OF LITERATURE

Moral Reasoning

The Cognitive Developmental Approach

Jean Piaget and Lawrence Kohlberg are the two most influential theorists in the field of moral development. Kohlberg's theory of moral judgment was an extension of Piaget's research with children's moral judgment. Piaget's (1965) moral judgment theory is based on a cognitive developmental approach. Piaget suggests that a child goes through qualitatively different stages of thought; a younger child's way of thinking is a structurally different than an older child's mode of thinking. He interviewed children about moral situations and found that they viewed these situations from a much different perspective than adults. Piaget suggests that there are developmental differences in the cognitive structures that organize moral judgment.

Kohlberg extended this moral development research and further defined the cognitive developmental approach. According to Kohlberg (1969), cognitive developmental theories include several assumptions. First, development involves basic transformations of cognitive structure, the rules for processing information or for connecting experiences. The development of cognitive structures is the

result of the interaction of the organism and the structure of the outside world. This development is toward greater equilibrium in the organism - environment interaction.

These interactions lead to cognitive stages which represent transformations of thought. Kohlberg's cognitive stages are qualitative differences in children's modes of thinking and ways of solving the same problem at different ages. These stages form an invariant sequence in an individual's development. Cultural factors may influence the speed of development, yet they do not change its sequence. All children, he believes, should go through the same order of steps, regardless of environment factors or learning.

Kohlberg says that cognitive stages are based on hierarchical sequence. Stages are increasingly differentiated and integrated. Therefore, higher stages replace and integrate cognitive structures found at lower stages, they are not mere additions to an old way of thinking. Kohlberg suggests that lower stages are still available for use by individual when the situation arises where they are adequate or when efforts at using a higher stages fail. However, Kohlberg believes there is a hierarchical preference within a person; an individual will prefer the highest stages he can produce.

Kohlberg's moral development theory emphasizes a cognitive development approach. Moral judgment is based on these underlying cognitive structures. Developmental

changes in morality are imbedded in the individual's transformations of thought from childhood to adulthood. Kohlberg (1976) describes three broad levels of moral development: pre-conventional, conventional and post-conventional. These levels can be shown by the relationship between the individual and society's rules and expectations. At the pre-conventional level, rules and societal expectations are external to the individual; at the conventional level, these societal expectations have been internalized, especially those of authorities. The highest level, post-conventional, an individual has differentiated himself from the rules and expectations of others and defines his values in terms of self-chosen principles.

Kohlberg presents six stages within these three levels of moral development. Kohlberg's six moral stages are hierarchical; an individual's movement through these stages is upward. The sequence of stages is invariant; one cannot skip a stage or go backwards. These stages are "structured wholes", total ways of thinking, not attitudes toward particular moral situations or experiences (Kohlberg, 1971).

The Defining Issues Test

Rest, Cooper, Coder, Masanz, & Anderson, (1974) and his associates based their moral judgment research on Kohlberg's cognitive developmental approach. Rest assumes that each moral judgment stage has a distinct way of viewing a given social or moral dilemma. He devised an objective test of moral judgment based on a subject's reasoning about six

moral dilemmas called the Defining Issues Test (DIT). Since different perspectives for analyzing moral dilemmas distinguish different stages of moral reasoning, the DIT contains a list of issue statements, each statement represents a moral judgment stage. Therefore, the way a subject judges what are the most important issues over six moral dilemmas can be assumed to be an indication of his appreciation of different conceptual frameworks or stages.

According to Rest (1983), the DIT assumes that people at different stages see moral dilemmas differently - specifically in what they define as the crux of a moral problem and the factors they consider the most important ones in solving the dilemma. He presumes that if people are presented with different statements about the issues of a moral dilemma, people at different developmental stages will choose different statements as the important issues. Therefore, the DIT contains six moral dilemmas with twelve issue statements for each dilemma that represent the different stages of moral reasoning. Each subject is asked to rate and rank each issue statement for its importance in solving the dilemma.

The DIT is an objective scorable test of moral reasoning. It is easily administered to groups. Since the DIT contains standardized choices and is highly structured, it has an objective format instead of the free-response interview used by Piaget and Kohlberg. The DIT has been used extensively in moral judgment research and it provides

a large data base for researchers. These studies generally support the developmental stage model of moral judgment.

However, O'Malley (1986) found that reward may have an adverse effect on moral reasoning. She found that material rewards had an immediate and temporary adverse effect on subject's scores on moral judgment scales. Could the material rewards offered to athletes in sport have an adverse effect on their moral reasoning?

Moral Reasoning and Sports

A cognitive developmental approach to moral development has only recently been applied to the field of sport psychology (Bredemeir, 1983; Weiss & Bredemeir, 1983). The research of Bredemeir and her associates has suggested that sport is an ambiguous context which may have a negative effect on moral reasoning (Bredemeir & Shields, 1984b).

Bredemeir and Shields (1984a) found that principled moral reasoning on the DIT was negatively associated with the aggressive behavior in forty-six basketball players. Bredemeir and Shields (1984b) also found that the levels of moral reasoning used to discuss sport dilemmas were lower than levels used to reason about everyday life dilemmas.

Bredemeir and Shields theorize that "sport contexts are sufficiently distinct from everyday life contexts to elicit a situational adaptation of moral reasoning patterns about hypothetical dilemmas" (Bredemeir & Shields, 1984b). They contend that participating in sport involves a moral transformation in which egocentricity is redefined as

appropriate. This results in "bracketed morality" within the sport setting, which is a temporary suspension of the usual moral obligations to consider others' needs and interests (Bredemeir & Shields, 1986). Thus a regression seen in the athlete's moral reasoning in sport dilemma may be the result of the use of bracketed morality.

Bredemeir considers several aspects of the sport context that may contribute to the temporary adoption of an egocentric morality. In sport there is a concentration of decision-making power and moral responsibility in the roles of coaches and officials. Independent thinking on the part of the athlete is discouraged and athletes are taught to react, rather than reason. Depersonalization of opponents is encouraged and may contribute to a more egocentric attitude. Bredemeir says that the sport realm provides socially legitimate opportunities to suspend the usual moral requirement that others' needs be given equal consideration to the interests of the self.

The amount of aggression permitted by a sport or the amount of physical contact involved in a particular sport may also be a factor. Bredemeir contends that those sports that encourage the development of situationally specific moral reasoning tend to be interactive contact sports rather than noncontact sports such as swimming. Contact sports directly and frequently raise moral issues because of their inherent potential for injury (Bredemeir & Shields, 1985).

Bredemeir, Weiss, Shields and Cooper (1986) found that boys participation and interest in high contact sports and girls participation in medium contact sports (the highest level of contact they reported) were positively correlated with less mature moral reasoning. Bredemeir and Shields (1985) were also concerned that "perhaps highly competitive sport experience will eventually have a negative impact on participant's moral growth."

Further research then was needed to determine if the amount of contact within a sport influenced moral reasoning. This study investigated the possible regression of moral reasoning in athletes in a high-contact sport and a low-contact sport and whether this effect is temporary or a more generalized response.

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APPENDIX B

RESEARCH INSTRUMENT

OPINIONS ABOUT SOCIAL PROBLEMS

This questionnaire is aimed at understanding how people think about social problems. Different people often have different opinions about questions of right and wrong. There are no "right" answers in the way that there are right answers to math problems. We would like you to tell us what you think about several problem stories. The papers will be fed to a computer to find the average for the whole group, and no one will see your individual answers.

Please give us the following information:

Number:_____

College Major:_____

Year you plan to graduate:_____

Long-term career goal:_____

* * * * * * * * * * * * *

In this questionnaire you will be asked to give your opinions about several stories. Here is a story as an example.

Frank Jones has been thinking about buying a car. He is married, has two small children and earns an average income. The car he buys will be his family's only car. It will be used mostly to get to work and drive around town, but sometimes for vacation trips also. In trying to decide what car to buy, Frank Jones realized that there were a lot of questions to consider. Below there is a list of some of these questions.

If you were Frank Jones, how important would each of these questions be in deciding what car to buy?

OPINIONS ABOUT SOCIAL PROBLEMS

This questionnaire is aimed at understanding how people think about social problems. Different peopoe often have different opinions about questions of right and wrong. There are no "right" answers in the way that there are right answers to math problems. We would like you to tell us what you think about several problem stories. The papers will be fed to a computer to find the average for the whole group, and no one will see your individual answers.

Number:_____

Please give us the following information:

Describe your involvement in athletic activities in high school and college. Please indicate which sports you played. If you were on the Varsity team, please indicate how many years you lettered.

* *

In this questionnaire, you will be asked to give your opinions about several stories. Here is a story as an example.

Frank Jones has been thinking about buying a car. He is married, has two small children and earns an average income. The car he buys will be his family's only car. It will be used mostly to get to work and drive around town, but sometimes for vacation trips also. In trying to decide what car to buy, Frank Jones realized that there were a lot of questions to consider. On the next page, there is a list of some of these questions.

If you were Frank Jones, how important would each of these questions be in deciding what car to buy?

1.2

Instructions for Part A: (Sample Question)

On the left hand side check one of the spaces by each statement of a consideration. (For instance, if you think that statement #1 is not important in making a decision about buying a car, check the space on the right.)

IMPORTANCE:

Great	Much	Some	Little	No	
				✓	1. Whether the car dealer was in the same block as where Frank lives. (Note that in this sample, the person taking the questionnaire did not think this was important in making a decision.)
✓					2. Would a *used* car be more economical in the long run than a *new* car. (Note that a check was put in the far left space to indicate the opinion that this is an important issue in making a decision about buying a car.)
		✓			3. Whether the color was green, Frank's favorite color.
				✓	4. Whether the cubic inch displacement was at least 200. (Note that if you are unsure about what "cubic inch displacement" means, then mark it "no importance.")
✓					5. Would a large, roomy car be better than a compact car.
				✓	6. Whether the front connibilies were differential. (Note that if a statement sounds like gibberish or nonsense to you, mark it "no importance.")

Instructions for Part B: (Sample Question)

From the list of questions above, select the most important one of the whole group. Put the number of the most important question on the top line below. Do likewise for your 2nd, 3rd and 4th most important choices. (Note that the top choices in this case will come from the statements that were checked on the far left-hand side—statements #2 and #5 were thought to be very important. In deciding what is the *most* important, a person would re-read #2 and #5, and then pick one of them as the *most* important, then put the other one as "second most important," and so on.)

MOST	2ND MOST IMPORTANT	3RD MOST IMPORTANT	4TH MOST IMPORTANT
5	2	3	1

HEINZ AND THE DRUG

1.3

In Europe a woman was near death from a special kind of cancer. There was one drug that doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000, which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and began to think about breaking into the man's store to steal the drug for his wife.

Should Heinz steal the drug? (Check one)

_____Should steal it _____Can't decide _____Should not steal it

IMPORTANCE:

Great	Much	Some	Little	No	
					1. Whether a community's laws are going to be upheld.
					2. Isn't it only natural for a loving husband to care so much for his wife that he'd steal?
					3. Is Heinz willing to risk getting shot as a burglar or going to jail for the chance that stealing the drug might help?
					4. Whether Heinz is a professional wrestler, or has considerable influence with professional wrestlers.
					5. Whether Heinz is stealing for himself or doing this solely to help someone else.
					6. Whether the druggist's rights to his invention have to be respected.
					7. Whether the essence of living is more encompassing than the termination of dying, socially and individually.
					8. What values are going to be the basis for governing how people act towards each other.
					9. Whether the druggist is going to be allowed to hide behind a worthless law which only protects the rich anyhow.
					10. Whether the law in this case is getting in the way of the most basic claim of any member of society.
					11. Whether the druggist deserves to be robbed for being so greedy and cruel.
					12. Would stealing in such a case bring about more total good for the whole society or not.

From the list of questions above, select the four most important:

Most important _____ Second most important _____

Third most important _____ Fourth most important _____

1.6

ESCAPED PRISONER

A man had been sentenced to prison for 10 years. After one year, however, he escaped from prison, moved to a new area of the country, and took on the name of Thompson. For 8 years he worked hard, and gradually he saved enough money to buy his own business. He was fair to his customers, gave his employees top wages, and gave most of his own profits to charity. Then one day, Mrs. Jones, an old neighbor, recognized him as the man who had escaped from prison 8 years before, and whom the police had been looking for.

Should Mrs. Jones report Mr. Thompson to the police and have him sent back to prison? (Check one)

____Should report him ____Can't decide ____Should not report him

IMPORTANCE:

Great	Much	Some	Little	No	
					1. Hasn't Mr. Thompson been good enough for such a long time to prove he isn't a bad person?
					2. Everytime someone escapes punishment for a crime, doesn't that just encourage more crime?
					3. Wouldn't we be better off without prisons and the oppression of our legal systems?
					4. Has Mr. Thompson really paid his debt to society?
					5. Would society be failing what Mr. Thompson should fairly expect?
					6. What benefits would prisons be apart from society, especially for a charitable man?
					7. How could anyone be so cruel and heartless as to send Mr. Thompson to prison?
					8. Would it be fair to all the prisoners who had to serve out their full sentences if Mr. Thompson was let off?
					9. Was Mrs. Jones a good friend of Mr. Thompson?
					10. Wouldn't it be a citizen's duty to report an escaped criminal, regardless of the circumstances?
					11. How would the will of the people and the public good best be served?
					12. Would going to prison do any good for Mr. Thompson or protect anybody?

From the list of questions above, select the four most important:

Most important_____ Second most important_____

Third most important_____ Fourth most important_____

NEWSPAPER 1.9

Fred, a senior in high school, wanted to publish a mimeographed newspaper for students so that he could express many of his opinions. He wanted to speak out against the war in Viet Nam and to speak out against some of the school's rules, like the rule forbidding boys to wear long hair.

When Fred started his newspaper, he asked his principal for permission. The principal said it would be all right if before every publication Fred would turn in all his articles for the principal's approval. Fred agreed and turned in several articles for approval. The principal approved all of them and Fred published two issues of the paper in the next two weeks.

But the principal had not expected that Fred's newspaper would receive so much attention. Students were so excited by the paper that they began to organize protests against the hair regulation and other school rules. Angry parents objected to Fred's opinions. They phoned the principal telling him that the newspaper was unpatriotic and should not be published. As a result of the rising excitement, the principal ordered Fred to stop publishing. He gave as a reason that Fred's activities were disruptive to the operation of the school.

Should the principal stop the newspaper? (Check one)

_____ Should stop it _____ Can't decide _____ Should not stop it

IMPORTANCE:

Great	Much	Some	Little	No	
					1. Is the principal more responsible to students or to the parents?
					2. Did the principal give his word that the newspaper could be published for a long time, or did he just promise to approve the newspaper one issue at a time
					3. Would the students start protesting even more if the principal stopped the newspaper?
					4. When the welfare of the school is threatened, does the principal have the right to give orders to students?
					5. Does the principal have the freedom of speech to say "no" in this case?
					6. If the principal stopped the newspaper would he be preventing full discussion of important problems?
					7. Whether the principal's order would make Fred lose faith in the principal.
					8. Whether Fred was really loyal to his school and patriotic to his country.
					9. What effect would stopping the paper have on the student's education in critical thinking and judgments?
					10. Whether Fred was in any way violating the rights of others in publishing his own opinions.
					11. Whether the principal should be influenced by some angry parents when it is the principal that knows best what is going on in the school.
					12. Whether Fred was using the newspaper to stir up hatred and discontent.

From the list of questions above, select the four most important:

Most important_____ Second most important_____

Third most important_____ Fourth most important_____

SCORING FORM

Subject ID _____ Date _____

STORY	STAGE 2	3	4	5a	5b	6	A	M	P	Inconsistencies
Heinz										
Students										
Prisoner										
Doctor										
Webster										
Newspaper										
Raw Stage Scores										
Stage Percents										

Subject ID _____ Date _____

STORY	STAGE 2	3	4	5a	5b	6	A	M	P	Inconsistencies
Heinz										
Students										
Prisoner										
Doctor										
Webster										
Newspaper										
Raw Stage Scores										
Stage Percents										

DIT Scoring Key

Story ITEM	1	2	3	4	5	6	7	8	9	10	11	12
Heinz	4	3	2	M	3	4	M	6	A	5A	3	5A
Stu.	3	4	2	5A	5A	3	6	4	3	A	5B	4
Pris.	3	4	A	4	6	M	3	4	3	4	5A	5A
Doc.	3	4	A	2	5A	M	3	6	4	5B	4	5A
Web.	4	4	3	2	6	A	5A	5A	5B	3	4	3
Newsp.	4	4	2	4	M	5A	3	3	5B	5A	4	3

DIT Norms (Rest, 1986)

Large Group Means And Standard Deviations

Group	n	Average P%	Estimated S.D.*	Range of Most Sample Means
Junior High	1,322	21.9	8.5	20-26
Senior High	581	31.8	13.5	27-36
College	2,479	42.3	13.2	37-46
Grads	183	53.3	10.9	48-56
Adults	1,149	40.0	16.7	36-50
TOTAL	5,714			

*Standard deviations for each large group are based on those samples reporting sample standard deviations.

APPENDIX C

RAW DATA

Variable Codes

Code	Variable Name
Group 1	Baseball Group
Group 2	Control Group
Group 3	Football Group
Class	College Classification
Years	Years of High School and College Sport Participation
S(1)	Stage score - first trial
M(1)	M score - first trial
P(1)	P score - first trial
S(2)	Stage score - second trial
M(2)	M score - second trial
P(2)	P score - second trial

		GROUP	CLASS	YEARS	S(1)	M(1)
		P(1)	S(2)	M(2)	P(2)	
CASE	1	1.0	3.0	7.0	4.0	3.0
CASE	1	40.0	3.0	2.0	36.7	
CASE	2	1.0	2.0	6.0	3.0	7.0
CASE	2	13.3	3.0	4.0	20.0	
CASE	3	1.0	3.0	7.0	5.0	0.0
CASE	3	56.7	3.0	0.0	36.7	
CASE	4	1.0	1.0	5.0	5.0	0.0
CASE	4	36.7	3.0	3.3	23.3	
CASE	5	1.0	2.0	6.0	4.0	3.0
CASE	5	23.3	5.0	0.0	43.3	
CASE	6	1.0	1.0	5.0	4.0	0.0
CASE	6	16.7	4.0	0.0	10.0	
CASE	7	1.0	2.0	6.0	4.0	3.0
CASE	7	20.0	4.0	3.0	10.0	
CASE	8	1.0	1.0	5.0	4.0	3.0
CASE	8	20.0	4.0	2.0	13.3	
CASE	9	1.0	3.0	7.0	3.0	5.0
CASE	9	16.7	4.0	4.0	13.3	
CASE	10	1.0	3.0	7.0	3.0	0.0
CASE	10	26.7	3.0	0.0	30.0	
CASE	11	1.0	1.0	5.0	4.0	4.0
CASE	11	23.3	4.0	2.0	10.0	
CASE	12	1.0	2.0	6.0	4.0	0.0
CASE	12	26.7	4.0	3.0	10.0	
CASE	13	1.0	1.0	5.0	3.0	2.0
CASE	13	16.7	3.0	0.0	16.7	
CASE	14	1.0	1.0	8.0	4.0	3.0
CASE	14	23.3	4.0	0.0	6.7	
CASE	15	1.0	1.0	4.0	3.0	1.0
CASE	15	6.7	3.0	0.0	23.3	
CASE	16	1.0	4.0	7.0	5.0	0.0
CASE	16	36.7	4.0	3.0	36.7	
CASE	17	1.0	2.0	0.0	5.0	3.0
CASE	17	43.3	5.0	6.0	40.0	
CASE	18	1.0	3.0	8.0	3.0	0.0
CASE	18	26.7	3.0	0.0	30.0	
CASE	19	1.0	1.0	0.0	4.0	0.0
CASE	19	33.3	4.0	0.0	26.7	
CASE	20	1.0	4.0	8.0	4.0	3.0
CASE	20	50.0	5.0	3.0	60.0	
CASE	21	1.0	2.0	6.0	3.0	0.0
CASE	21	3.3	4.0	2.0	0.0	
CASE	22	1.0	2.0	7.0	4.0	0.0
CASE	22	30.0	4.0	0.0	23.3	
CASE	23	1.0	3.0	4.0	4.0	4.0
CASE	23	20.0	4.0	0.0	30.0	
CASE	24	1.0	3.0	7.0	5.0	4.0
CASE	24	53.3	4.0	2.0	36.7	
CASE	25	1.0	3.0	2.0	4.0	0.0
CASE	25	20.0	4.0	2.0	3.3	
CASE	26	1.0	2.0	7.0	4.0	0.0
CASE	26	6.7	4.0	2.0	33.3	
CASE	27	1.0	2.0	6.0	4.0	2.0
CASE	27	0.0	4.0	0.0	40.0	
CASE	28	1.0	4.0	8.0	4.0	6.0
CASE	28	30.0	4.0	0.0	20.0	

CASE	29	2.0	1.0	5.0	3.0	1.0
CASE	29	20.0	3.0	0.0	13.3	
CASE	30	2.0	1.0	5.0	3.0	0.0
CASE	30	23.3	4.0	5.0	26.7	
CASE	31	2.0	2.0	0.0	3.0	3.0
CASE	31	20.0	3.0	0.0	20.0	
CASE	32	2.0	3.0	4.0	4.0	2.0
CASE	32	6.7	5.0	0.0	46.7	
CASE	33	2.0	1.0	2.0	5.0	1.0
CASE	33	30.0	3.0	2.0	26.7	
CASE	34	2.0	1.0	3.0	4.0	1.0
CASE	34	10.0	4.0	4.0	33.3	
CASE	35	2.0	1.0	0.0	5.0	0.0
CASE	35	50.0	5.0	0.0	50.0	
CASE	36	2.0	2.0	6.0	3.0	0.0
CASE	36	30.0	3.0	0.0	16.7	
CASE	37	2.0	1.0	4.0	4.0	1.0
CASE	37	23.3	3.0	3.0	16.7	
CASE	38	2.0	2.0	6.0	3.0	3.0
CASE	38	10.0	4.0	2.0	6.7	
CASE	39	2.0	2.0	6.0	4.0	4.0
CASE	39	23.3	5.0	0.0	53.3	
CASE	40	2.0	4.0	3.0	5.0	0.0
CASE	40	46.6	5.0	0.0	56.7	
CASE	41	2.0	3.0	0.0	4.0	1.0
CASE	41	13.3	4.0	0.0	13.3	
CASE	42	2.0	2.0	4.0	4.0	4.0
CASE	42	23.3	3.0	2.0	23.3	
CASE	43	2.0	2.0	4.0	4.0	4.0
CASE	43	26.7	4.0	5.0	43.3	
CASE	44	2.0	1.0	4.0	4.0	0.0
CASE	44	6.7	3.0	6.0	10.0	
CASE	45	2.0	1.0	3.0	4.0	4.0
CASE	45	23.3	3.0	4.0	26.7	
CASE	46	2.0	2.0	3.0	3.0	4.0
CASE	46	20.0	4.0	7.0	16.7	
CASE	47	2.0	1.0	4.0	4.0	2.0
CASE	47	16.7	4.0	1.0	13.3	
CASE	48	2.0	2.0	4.0	4.0	3.0
CASE	48	13.3	5.0	0.0	56.7	
CASE	49	3.0	1.0	5.0	4.0	0.0
CASE	49	16.7	4.0	0.0	20.0	
CASE	50	3.0	2.0	6.0	5.0	0.0
CASE	50	36.7	4.0	1.0	33.3	
CASE	51	3.0	3.0	6.0	5.0	4.0
CASE	51	60.0	5.0	4.0	46.7	
CASE	52	3.0	3.0	6.0	4.0	0.0
CASE	52	40.0	4.0	0.0	30.0	
CASE	53	3.0	3.0	4.0	4.0	1.0
CASE	53	6.7	4.0	2.0	13.3	
CASE	54	3.0	3.0	3.0	5.0	2.0
CASE	54	56.7	4.0	3.0	40.0	
CASE	55	3.0	4.0	0.0	4.0	0.0
CASE	55	10.0	4.0	0.0	3.3	
CASE	56	3.0	4.0	0.0	4.0	5.0
CASE	56	6.7	4.0	6.0	10.0	
CASE	57	3.0	2.0	0.0	5.0	3.0
CASE	57	43.3	4.0	4.0	40.0	
CASE	58	3.0	2.0	0.0	4.0	1.0
CASE	58	23.3	4.0	2.0	20.0	
CASE	59	3.0	4.0	0.0	5.0	1.0

CASE	59	43.3	3.0	0.0	40.0	
CASE	60	3.0	1.0	5.0	3.0	3.0
CASE	60	13.3	4.0	2.0	23.3	
CASE	61	3.0	2.0	0.0	4.0	3.0
CASE	61	40.0	4.0	6.0	36.7	
CASE	62	3.0	2.0	1.0	5.0	5.0
CASE	62	30.0	3.0	4.0	26.7	
CASE	63	3.0	4.0	0.0	4.0	4.0
CASE	63	10.0	4.0	5.0	36.7	
CASE	64	3.0	2.0	3.0	3.0	2.0
CASE	64	23.3	3.0	2.0	16.7	
CASE	65	3.0	2.0	0.0	4.0	3.0
CASE	65	6.7	4.0	4.0	10.0	
CASE	66	3.0	4.0	4.0	3.0	4.0
CASE	66	16.7	3.0	4.0	13.3	
CASE	67	3.0	3.0	8.0	4.0	3.0
CASE	67	33.3	4.0	2.0	16.7	
CASE	68	3.0	3.0	0.0	3.0	3.0
CASE	68	40.0	3.0	1.0	36.7	
CASE	69	3.0	3.0	4.0	5.0	3.0
CASE	69	60.0	5.0	3.0	46.7	
CASE	70	3.0	1.0	0.0	5.0	4.0
CASE	70	30.0	5.0	3.0	26.7	
CASE	71	3.0	2.0	0.0	4.0	0.0
CASE	71	43.3	4.0	2.0	33.3	
CASE	72	3.0	4.0	8.0	4.0	0.0
CASE	72	30.0	4.0	0.0	30.0	

APPENDIX D

SELECTED STATISTICAL ANALYSES

Variable Codes

Code	Variable Name
Group 1	Baseball Group
Group 2	Control Group
Group 3	Football Group
Class	College Classification
Years	Years of High School and College Sport Participation
S(1)	Stage score - first trial
M(1)	M score - first trial
P(1)	P score - first trial
S(2)	Stage score - second trial
M(2)	M score - second trial
P(2)	P score - second trial

Summary statistics for all subjects and by group

TOTAL OBSERVATIONS: 72

	GROUP	CLASS	YEARS	S(1)	M(1)
N OF CASES	72	72	72	72	72
MINIMUM	1.000	1.000	0.000	3.000	0.000
MAXIMUM	3.000	4.000	8.000	5.000	7.000
MEAN	1.744	2.236	4.056	3.986	2.056
STANDARD DEV	0.854	1.014	2.664	0.682	1.815

	P(1)	S(2)	M(2)	P(2)
N OF CASES	72	72	72	72
MINIMUM	0.000	3.000	0.000	0.000
MAXIMUM	60.000	5.000	7.000	60.000
MEAN	26.064	3.861	2.004	26.437
STANDARD DEV	14.716	0.657	1.960	14.250

THE FOLLOWING RESULTS ARE FOR:
GROUP = 1.000

TOTAL OBSERVATIONS: 28

	GROUP	CLASS	YEARS	S(1)	M(1)
N OF CASES	28	28	28	28	28
MINIMUM	1.000	1.000	0.000	3.000	0.000
MAXIMUM	1.000	4.000	8.000	5.000	7.000
MEAN	1.000	2.214	5.679	3.929	2.000
STANDARD DEV	0.000	0.995	2.127	0.663	2.091

	P(1)	S(2)	M(2)	P(2)
N OF CASES	28	28	28	28
MINIMUM	0.000	3.000	0.000	0.000
MAXIMUM	56.700	5.000	6.000	60.000
MEAN	25.718	3.821	1.546	24.403
STANDARD DEV	14.396	0.612	1.677	14.176

THE FOLLOWING RESULTS ARE FOR:
GROUP = 2.000

TOTAL OBSERVATIONS: 20

	GROUP	CLASS	YEARS	S(1)	M(1)
N OF CASES	20	20	20	20	20
MINIMUM	2.000	1.000	0.000	3.000	0.000
MAXIMUM	2.000	4.000	6.000	5.000	4.000
MEAN	2.000	1.750	3.500	3.850	1.900
STANDARD DEV	0.000	0.851	1.850	0.671	1.586

	P(1)	S(2)	M(2)	P(2)
N OF CASES	20	20	20	20
MINIMUM	6.700	3.000	0.000	6.700
MAXIMUM	50.000	5.000	7.000	56.700
MEAN	21.825	3.850	2.050	28.505
STANDARD DEV	11.459	0.813	2.350	16.668

THE FOLLOWING RESULTS ARE FOR:
GROUP = 3.000

TOTAL OBSERVATIONS: 24

	GROUP	CLASS	YEARS	S(1)	M(1)
N OF CASES	24	24	24	24	24
MINIMUM	3.000	1.000	0.000	3.000	0.000
MAXIMUM	3.000	4.000	8.000	5.000	5.000
MEAN	3.000	2.667	2.625	4.167	2.250
STANDARD DEV	0.000	1.007	2.856	0.702	1.700

	P(1)	S(2)	M(2)	P(2)
N OF CASES	24	24	24	24
MINIMUM	6.700	3.000	0.000	3.300
MAXIMUM	60.000	5.000	6.000	46.700
MEAN	30.000	3.917	2.500	27.088
STANDARD DEV	16.876	0.584	1.865	12.339

One-way analysis of variance

for S, M, P scores

SUMMARY STATISTICS FOR S(1)

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = .087 DF= 2 PROBABILITY = .957

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	1.246	2	0.623	1.354	.265
WITHIN GROUPS	31.740	69	0.460		

SUMMARY STATISTICS FOR M(1)

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 1.953 DF= 2 PROBABILITY = .377

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	1.478	2	0.739	.219	.804
WITHIN GROUPS	232.300	69	3.367		

SUMMARY STATISTICS FOR P(1)

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 2.928 DF= 2 PROBABILITY = .231

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	734.548	2	367.274	1.731	.185
WITHIN GROUPS	14640.679	69	212.184		

SUMMARY STATISTICS FOR S(2)

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 2.776 DF= 2 PROBABILITY = .250

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	0.121	2	0.060	.136	.873
WITHIN GROUPS	30.490	69	0.442		

SUMMARY STATISTICS FOR M(2)

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 2.655 DF= 2 PROBABILITY = .265

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	11.809	2	5.905	1.562	.217
WITHIN GROUPS	260.880	69	3.781		

SUMMARY STATISTICS FOR P(2)

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 1.865 DF= 2 PROBABILITY = .394

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	211.585	2	105.793	.514	.600
WITHIN GROUPS	14205.848	69	205.882		

Statistical Comparisons of the

two baseball groups

INDEPENDENT SAMPLES T-TEST ON P(1) GROUPED BY GROUP

GROUP	N	MEAN	SD
1.000	13	25.908	12.115
3.000	15	25.553	16.547

SEPARATE VARIANCES T = .065 DF = 25.4 PROB = .949
POOLED VARIANCES T = .064 DF = 26 PROB = .950

INDEPENDENT SAMPLES T-TEST ON P(2) GROUPED BY GROUP

GROUP	N	MEAN	SD
1.000	13	21.021	11.894
3.000	15	27.333	15.699

SEPARATE VARIANCES T = 1.208 DF = 25.6 PROB = .238
POOLED VARIANCES T = 1.184 DF = 26 PROB = .247

PAIRED SAMPLES T TEST ON P(1) VS P(2) WITH 28 CASES

MEAN DIFFERENCE = 1.315
SD DIFFERENCE = 14.259
T = .488 DF = 27 PROB = .629

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INDEPENDENT SAMPLES T-TEST ON        S(1)  GROUPED BY    GROUP

     GROUP          N      MEAN            SD
       1.000       13         3.846         0.689
       3.000       15         4.000         0.655

SEPARATE VARIANCES T =          .603 DF =  25.0 PROB = .552
  POOLED VARIANCES T =          .605 DF =    26 PROB = .550


INDEPENDENT SAMPLES T-TEST ON        S(2)  GROUPED BY    GROUP

     GROUP          N      MEAN            SD
       1.000       13         3.615         0.650
       3.000       15         4.000         0.535

SEPARATE VARIANCES T =         1.693 DF =  23.3 PROB = .104
  POOLED VARIANCES T =         1.718 DF =    26 PROB = .098



PAIRED SAMPLES T-TEST ON        S(1)  VS        S(2) WITH    28 CASES

MEAN DIFFERENCE =         0.107
SD DIFFERENCE =         0.737
T =         .769 DF =    27 PROB = .449
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INDEPENDENT SAMPLES T-TEST ON        M(1)  GROUPED BY    GROUP

     GROUP          N      MEAN            SD
       1.000       13         2.308         2.250
       3.000       15         1.733         1.981

SEPARATE VARIANCES T =          .712 DF =   24.2 PROB = .483
  POOLED VARIANCES T =          .719 DF =     26 PROB = .479

INDEPENDENT SAMPLES T-TEST ON        M(2)  GROUPED BY    GROUP

     GROUP          N      MEAN            SD
       1.000       13         1.792         1.611
       3.000       15         1.333         1.759

SEPARATE VARIANCES T =          .720 DF =   25.9 PROB = .478
  POOLED VARIANCES T =          .716 DF =     26 PROB = .481
```

```
PAIRED SAMPLES T-TEST ON        M(1)  VS        M(2) WITH    28 CASES

MEAN DIFFERENCE =         0.454
SD DIFFERENCE =         2.302
T =        1.042 DF =    27 PROB = .306
```

Analysis of variance on 3 subject groups on P, S, M variables

NUMBER OF CASES PROCESSED: 72

DEPENDENT VARIABLE MEANS

P(1)	P(2)
26.064	26.437

UNIVARIATE AND MULTIVARIATE REPEATED MEASURES ANALYSIS

****
* BETWEEN SUBJECTS EFFECTS *
****

TEST FOR EFFECT CALLED:
GROUP

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	378.909	2	189.454	0.575	0.565
ERROR	22733.491	69	329.471		

****
* WITHIN SUBJECTS EFFECTS *
****

TEST FOR EFFECT CALLED:
CONSTANT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	23.602	1	23.602	0.266	0.607
ERROR	6113.036	69	88.595		

TEST FOR EFFECT CALLED:
GROUP

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	567.224	2	283.612	3.201	0.047
ERROR	6113.036	69	88.595		

NUMBER OF CASES PROCESSED: 72

DEPENDENT VARIABLE MEANS

S(1)	S(2)
3.986	3.861

UNIVARIATE AND MULTIVARIATE REPEATED MEASURES ANALYSIS

****
* BETWEEN SUBJECTS EFFECTS *
****

TEST FOR EFFECT CALLED:
GROUP

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	1.018	2	0.509	0.824	0.443
ERROR	42.642	69	0.618		

****
* WITHIN SUBJECTS EFFECTS *
****

TEST FOR EFFECT CALLED:
CONSTANT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.501	1	0.501	1.764	0.189
ERROR	19.589	69	0.284		

TEST FOR EFFECT CALLED:
GROUP

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.348	2	0.174	0.613	0.545
ERROR	19.589	69	0.284		

NUMBER OF CASES PROCESSED: 72

DEPENDENT VARIABLE MEANS

M(1)	M(2)
2.056	2.004

UNIVARIATE AND MULTIVARIATE REPEATED MEASURES ANALYSIS

****
* BETWEEN SUBJECTS EFFECTS *
****

TEST FOR EFFECT CALLED:
GROUP

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	9.527	2	4.763	0.961	0.388
ERROR	342.090	69	4.958		

****
* WITHIN SUBJECTS EFFECTS *
****

TEST FOR EFFECT CALLED:
CONSTANT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.011	1	0.011	0.005	0.943
ERROR	151.090	69	2.190		

TEST FOR EFFECT CALLED:
GROUP

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	3.760	2	1.880	0.859	0.428
ERROR	151.090	69	2.190		

VITA

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Master of Science

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