

The University of Texas at Arlington
McNair Research Journal



Summer 1998 ~ Volume 2

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Volume 2

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* The appendices of this project have not been included in this publication because of their extensive length. Persons wishing copies of these appendices may contact the McNair Scholars office at The University of Texas at Arlington, PO Box 19509, Arlington, TX, 76019.

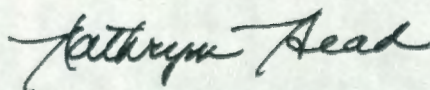
Notes from the Director

Congratulations to the 1998 Ronald E. McNair Postbaccalaureate Achievement Program scholars at The University of Texas at Arlington! Your research accomplishments as evidenced on the following pages are to be commended and honored. The superior quality of your work demonstrates your own scholarly dedication and perseverance as well as the wise counsel and guidance of your faculty mentors. You have every right to take pride in the fact that knowledge in your various disciplines has been advanced as a result of your efforts.

Best wishes on your future academic successes. The McNair Scholars Program supports you and believes in you. We are hopeful that your dreams for yourselves become realities!

"They can because they think they can."

Virgil



Kathryn Head
Director
McNair Scholars Program

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Pier 40: Reclaiming the Edge

Michael Lee Bessner

Mentor: Mr. John Maruszczak, Department of Architecture

Abstract

Since the first permanent European settlement was made in lower Manhattan in 1625, the need to establish commerce has forced the development of bulkheads and piers along the New York City waterfront. The vast quantity of goods passing through the port established Manhattan as a major international port by 1900. Today, technological advances and the onslaught of the highway system, has rendered maritime livelihood almost obsolete, leaving behind a derelict shoreline of rotting piers and abandoned marine terminals. Community Board 2, Manhattan, has established a design competition for the redevelopment of Pier 40 into a public park. By analyzing the history and patterns of dredging and landfill along the waterfront, and the subsequent building of the riverwall and piers, a method of operation for reclamation will be established. The conceptual implications of the history of waterfront reclamation will be applicable in the development of pier 40 as a viable public space.

"But suppose that walls rise towards heaven in such a way that I am moved. I perceive your intentions. Your mood has been gentle, brutal, charming, or noble. The stones you have erected tell me so. You fix me to the place and my eyes regard it. They behold something that expresses a thought. A thought that expresses itself without word or sound, but solely by means of shape which stand in a certain relationship to one another. These shapes are such that they are clearly revealed in light. They are a mathematical creation of the mind. They are the language of architecture . . . you have established relationships which have aroused my emotions. This is architecture." D.K. Francis, Ching Architecture: form, space, and order



Figure 1, Maloney, 1975, cover illustration

"Pier 40: Reclaiming the Edge," is an attempt to reintroduce the presence of the Manhattan waterfront back into the lives of the people of New York City. Through a careful study of the role played by the harbor in shaping the way people worked, lived, and played on the waterfront, as well as the circumstances leading to the eventual devolvement of the water's edge, a method of operation will be established for the analysis and redevelopment of Pier 40 as a generator for new social interaction and recreation on the waterfront.

Historically, the island of New York has been shaped by its marriage to the waterways of the region. From the beginning, the port was the driving force behind New York's development. Here was where the era of steam navigation began in 1807 with Robert Fulton's trip to Albany. (Fig. 1) Further advances in shipbuilding technology, followed by an increase in maritime commerce established Manhattan as the dominant American seaport and metropolis before the Civil War, and one of the world's major international ports by 1900.

Today, Manhattan has turned its attention away from the waterfront for new purposes. As a world center for economic financial trading and marketing (Fig. 2), New York is no longer the great international shipping and industrial port it once was. Commerce is no longer carried on via ships and barges, but electronically via stock exchange houses and cellular phones.

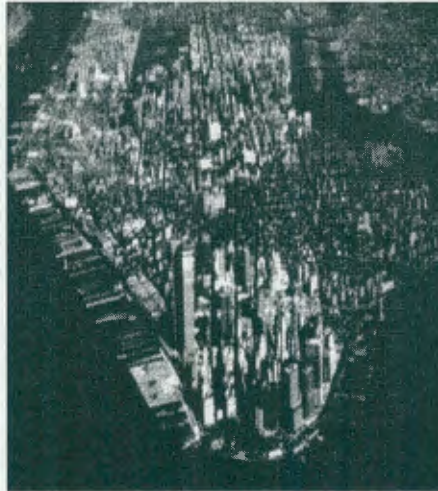


Figure 2, Maloney, 1975, p.1

In the past, New York's deep water harbor and abundant estuaries provided both spiritual and practical meaning to the lives of New Yorkers. At the peak of port activity, thousands of harbor structures were dedicated to industrial purposes such as shipbuilding (Fig. 3), cargo storage, and other maritime support trades. A few pier constructions facilitated the transportation of commuters to and from Manhattan via ferryboat, and a downtown airport on the Lower Hudson river (Figs. 4, 6). Still others were built purely for recreational, non-commercial interests, such as a public bathhouse (Fig. 5), and a sundeck (Fig. 7), which encouraged social interaction on the waterfront.

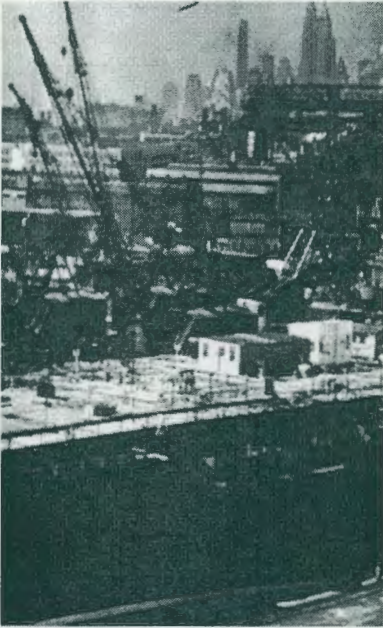


Figure 3, Feininger, 1978, p.26



Figure 4, Feininger, 1978, p.174

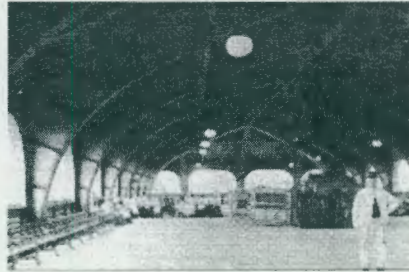


Figure 5, Bone, 1997, p.145

With almost every available foot of shoreline occupied by some type of maritime building, this horizontal city on the water became an entity unto itself, in stark contrast to the verticality of inland New York City. As a transition between the sea and land, this city on the edge had its own hotels, bars, businesses, and recreational facilities. Life here was dependent on the shipping traffic in and out of the port and the residual facilities and services brought about by that trade.



Fig. 6, Feininger, 1978, p. 15



Figure 7, Bone, 1997, p. 144

With the advent of industrialization came the construction of the West Side Highway (Fig. 8) to facilitate the emerging presence of the automobile. Though perceived as an act to further advance the modernization of a growing city, it actually did more harm than good.



Figure 8, Feininger, 1978, p. 176

To make way for the new highway, a four mile stretch of shoreline on the Hudson River was razed of residences and businesses, effectively displacing thousands of people from their homes. With increased automobile congestion, land set aside for park extension areas were relinquished for the construction of additional roadways and residual parking areas.

As a result, the Hudson River waterfront was literally severed from the fabric of the city (Fig. 9). The new highway had become a barrier between the city and the harbor. As access to the waterfront was severely inhibited, the once profound effect the waterfront had on the lives of New Yorkers was lost entirely.



Figure 9, Bone, 1997, p. 226

Further advances in technology, such as the advent of the jet airplane, redefined the nature of commercial shipping. This method proved to be faster and more economical. Combined with the ever growing presence of the automobile, the transportation of goods and people was accomplished faster and easier over land and



Figure 10, Feininger, 1975, p. 12

air.

Passenger ferry traffic came to a lull (Fig. 10), as did commercial shipping by boat. As a result, maritime livelihood was rendered obsolete, leaving behind a derelict shoreline of rotting piers and abandoned marine terminals (Figs. 11, 12).



Figure 11, Bone, 1997, p. 150



Figure 12, Bone, 1997, p. 188

With no longer a need for a commercial port on the Hudson River, a great opportunity exists for the reclamation of New York's forgotten edge. Public opinion has varied as to the nature of any such development. Whether it be for commercial or public usage has been a debate among citizens and local government. For years, New York has tried to maintain a master plan of urban parks, namely, the

Hudson River Waterfront Park, a continuous system of parks on the water's edge (Fig 13). However, it has become increasingly difficult to realize any inspired or visionary works through the masterplanning process. A few attempts at reviving the edge have been successful in their own right, but such attempts have been developed piecemeal.



Figure 13, Cameron, 1988, p. 73

The parks developed, such as Battery Park (Fig. 14), Carl Schurze Park (Fig. 15), and Riverbank State Park (Fig. 16), in which a football field and other sports and recreational amenities have been built on top of the North River Pollution Control Plant, remain disconnected from one another. With one of the world's greatest urban planning opportunities lying dormant, the time is right to seriously reconsider the waterfront as a public commodity.

Figure 14, Mayor's Office of Lower Manhattan Development, 1975, p. 9



Figure 15, Bone, 1997, p. 183



Figure 16, Bone, 1997, p. 215



With public space at a premium, Community Board 2, Manhattan, seeks to revitalize the urban community by redeveloping Pier 40 into an open space public park, free of commercial development. Currently being used for police department storage and parking, initial plans call for a demolition of the existing warehouse structure on Pier 40 (Fig. 17).

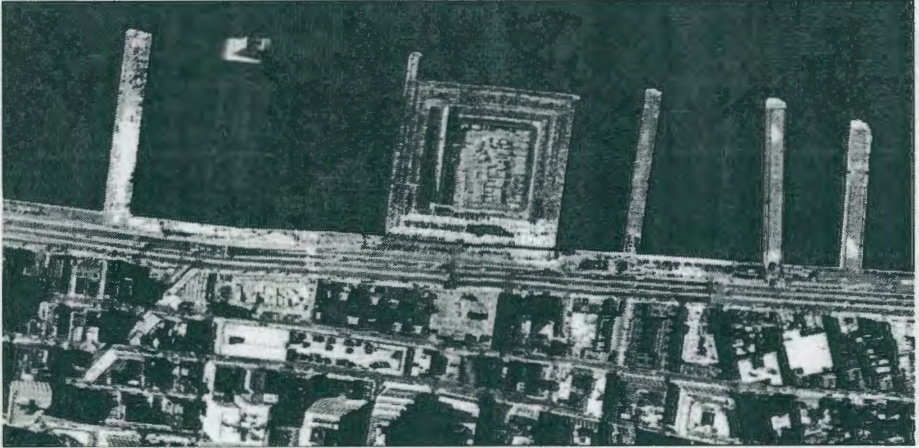


Figure 17

With this, the opportunity exists for an alternative way to reengage the waterfront while reclaiming an unused void within the city. As a starting point the site is examined in terms of dredging and landfill patterns over time, creating a constructed topography in relation to the old shoreline (Fig. 18).

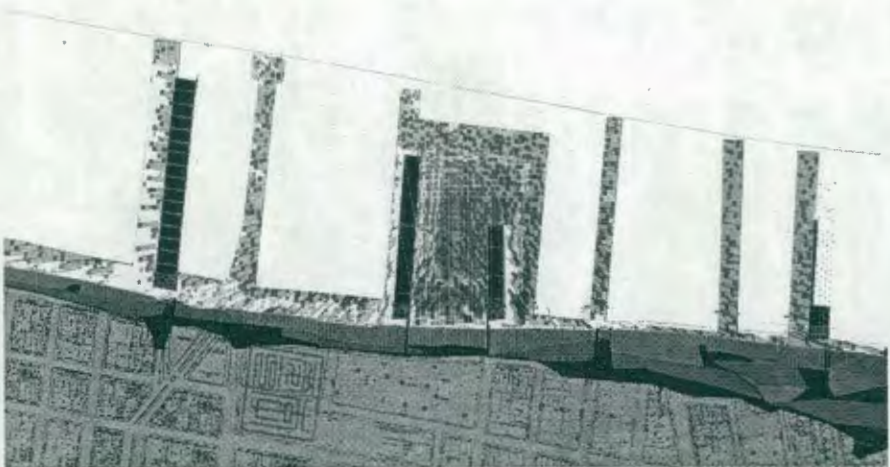


Figure18

The intention is to analyze the topographical ground conditions at the seam between ground and water in order to develop a vocabulary of new and unexplored models for the reclamation of Pier 40 as a viable public space (Fig. 19). As opposed to mapping any shipping traffic at the site, as none exists, the flow of information is instead registered. This serves as a conceptual model for the reinterpretation of the site as a zone where no physical activity takes place, but where digital transmissions, invisible, yet multi-layered, suggest new methods of programmatic layering (Fig. 20).

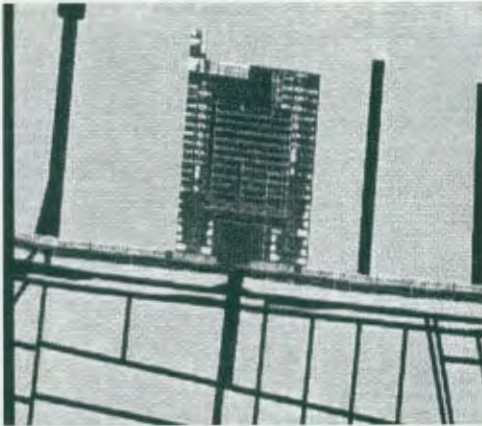


Figure 19

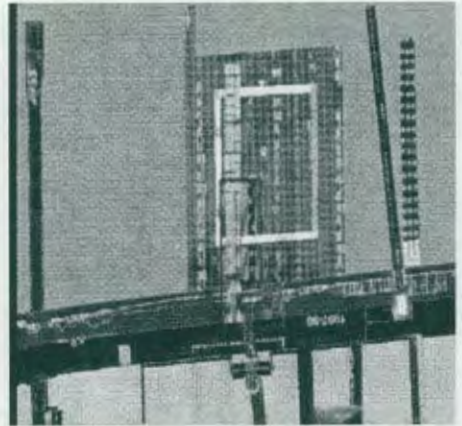


Figure 20

These didactic sets of drawings serve as a conceptual base for the eventual reconstruction of the site. In terms of the physical characteristics of Pier 40, the ground condition is treated as an advanced step in the ongoing landfill and shoreline reclamation operations in Manhattan. As such, a multi-layered reading of the site is accomplished.

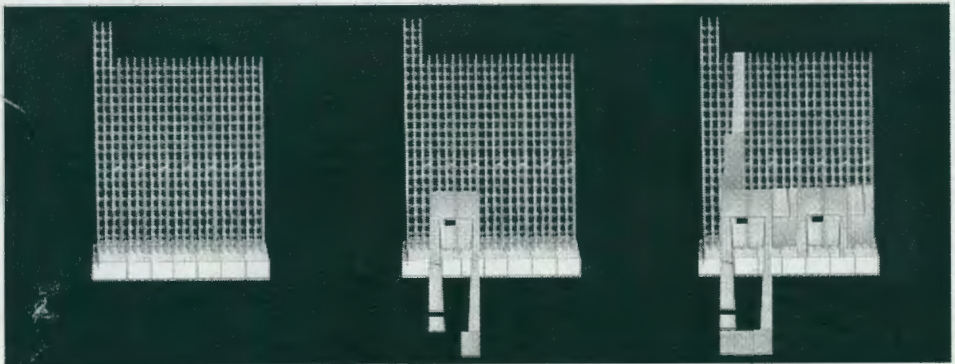


Figure 21

As a result of the previous analyses of the site, the concrete decking on Pier 40 is restructured into a series of plates which are sculpted, carved and layered (Fig. 21). The configuration of these plates informs their appropriate usage. Each plate functions as part of the pier structure (Fig. 22). They are each designed to perform a specific user function. Some are designed to function as a series of pedestrian paths that facilitate movement across the pier. Others are designed with water troughs for reflecting pools, still others will serve as ramps to transfer pedestrians between the various, yet subtle, level changes, and some will be etched with shallow cuts to hold grass and dirt.

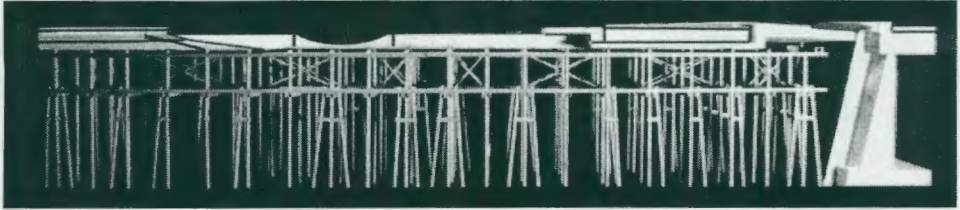


Figure 22

Sectional analysis of tidal connections at the seam between pier and river (Fig. 23), reveals a dynamic plane in which pier and water slip by each other, effectively inverting the topography between pier and water.

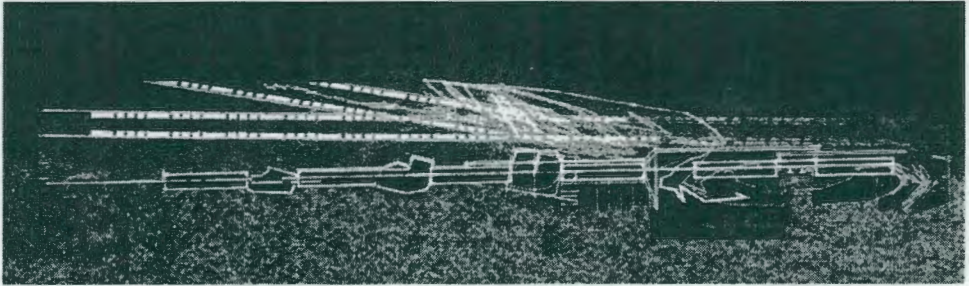


Figure 23

Conceptually, this inversion creates new multi-layered readings of the site (Fig. 24) as being simultaneously dry and flooded. As such, a glass box is constructed at the entrance to the pier (Fig. 25) to accommodate this new condition. The glass box acts as a container for, and within, water.

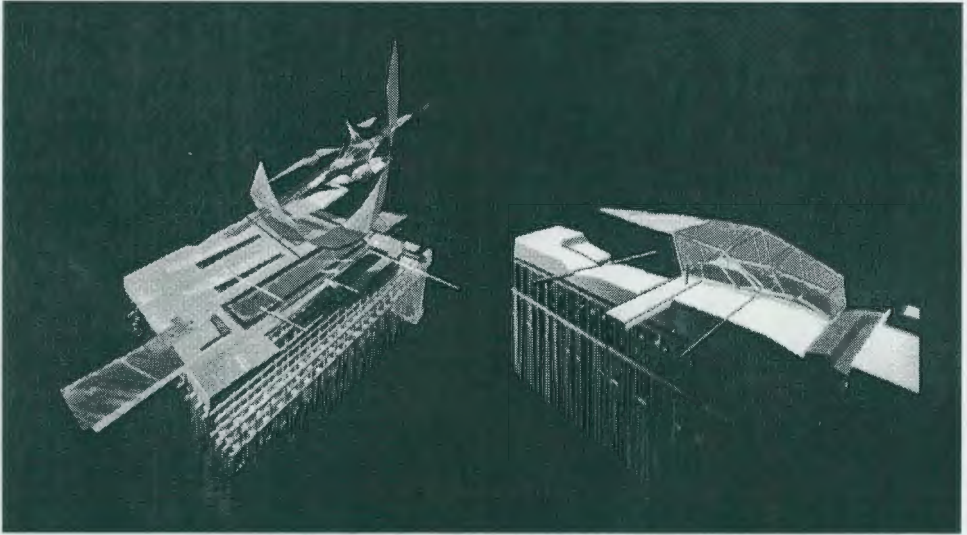


Figure 24

Figure 25

In essence, Pier 40 becomes a concrete garden on the waterfront (Fig. 26). As an homage to the history of the Manhattan waterfront, the glass box celebrates the importance of the Hudson River in two ways. As a civic marker, the glass box mirrors and reflects the sequence of urban processing along the pier and water. As a hydrological marker, the glass box becomes an aquarium, allowing for the observation of local marine life and the monitoring of current water conditions for any potential pollutants. As such, these conditions are projected across the site on a public scale. As a public park (Fig. 27), Pier 40 allows the individual to once again contemplate the recreational and spiritual nature of the waterfront.

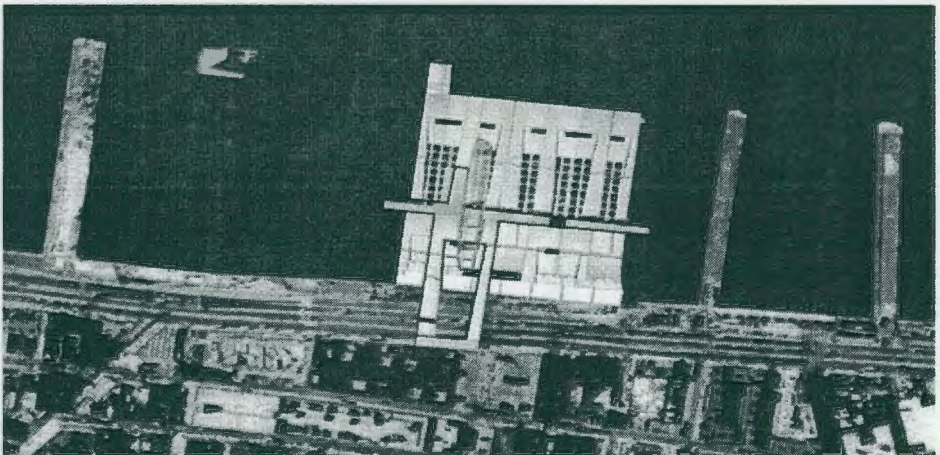


Figure 26

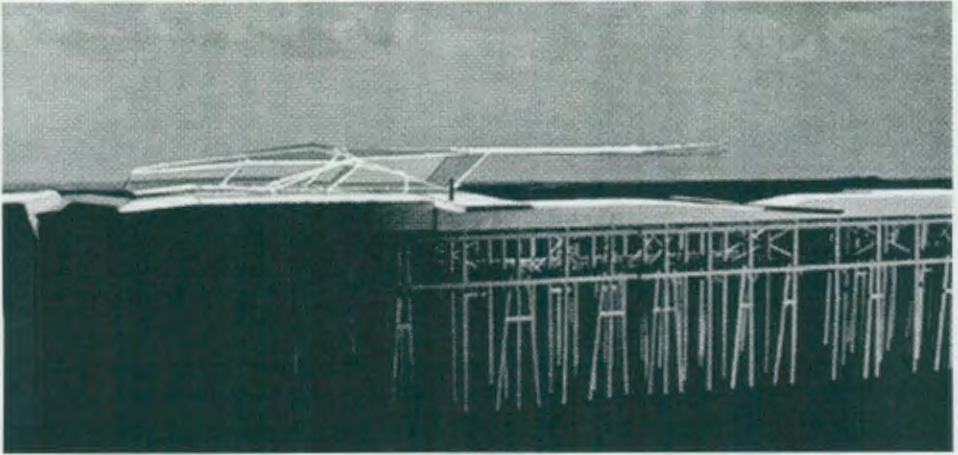


Figure 27

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Making Intelligent Decisions In Uncertain Environments

Shar Whisenhunt

Mentor: Dr. Diane Cook, Department of Computer Science Engineering

Abstract

The focus of this project is to develop computer programs that make intelligent decisions in environments having uncertainty. In particular, multiple robots are used to play a version of the wumpus world game. In this game, one robot represents the agent and a second robot represents the wumpus. The agent uses Netica, a belief network, to autonomously predict the wumpus' next move as well as decide the agent's best move at each step in the game. I will compare the performance of the agent as he faces an increasing amount of uncertainty in the environment. It is expected that the agent will be able to make reasonable decisions that allow it to elude the wumpus, grab the gold, and win the game even when faced with uncertainty.

INTRODUCTION

Many adversarial environments exist in which an agent must take the best possible action in order to survive or outwit an opponent. While agent strategies can be learned in such situations, applying learning techniques to real-world applications places constraints on the learner such as being able to deal with uncertainty and learning from few training examples. Uncertainty may arise from a number of sources including incomplete or incorrect information about the world, unexpected changes in the environment, and unknown actions taken by adversaries. The scarcity of training examples may occur when generating training examples is expensive or when a separate training phase is not possible, thus, learning must occur in an incremental fashion.

In this project machine learning techniques were used to automatically predict opponent moves and select agent moves in a two-player robotic adversarial game. Netica, a commercial belief network, was applied to a robotic version of the wumpus world game. The performance of the belief network was measured on simulated games and the performance was monitored as the amount of uncertainty in robot sensing changed.

The following section of the paper describes the two-player game utilized for the experiments, an enactment of the wumpus world game. Descriptions are then provided of the belief networks used to predict opponent moves and suggest agent actions. The results were evaluated using randomly generated test cases from the wumpus world game.

WUMPUS WORLD

The wumpus world is based on an early computer game. The basis for the game is an agent who explores a cave represented as a $N \times N$ grid world while avoiding a creature known as the wumpus. Other elements of the world consist of bottomless pits (which do not affect the wumpus) and a bar of gold. The objective of

the game is to collect the gold bar, return to the initial grid location [1, 1] and exit the cave. The information that the agent senses/receives each turn to aid in locating the gold and avoiding the wumpus and pits is a five-element percept. If the agent is in a square directly adjacent to a pit, The agent will perceive a breeze. If there is a gold bar in the same location as the agent it will perceive glitter. If the agent is adjacent to the wumpus it will perceive a stench. If the agent runs into a wall it will perceive a bump, and, if the agent shoots its arrow and kills the wumpus, it will hear a scream.

Changes to the domain were made to use sonar readings and a vision system instead of the five-element percept because the robots playing the roles of the agent and the wumpus were equipped with sonar sensors and a camera. The agent was supplied with the locations of the pits and the gold bar. Using the vision system, the agent looked for the wumpus, and, if the wumpus was found, the agent used its sonar sensors to determine the wumpus' exact location. The sonar sensors were also used so that the agent could determine where the walls were and could calculate its position in the world.

The actions allowed the agent were to move north, move south, move east, move west, climb out of the cave, grab the gold, and look for the wumpus. The actions allowed the wumpus were to move north, move south, move east, move west, and do nothing.

Obstacles were inserted into the domain to increase the world complexity and amount of uncertainty. If the wumpus and agent were on opposite sides of the obstacle neither could see nor sense the other robot. With an increased number of obstacles the agent was less likely to be able to locate the wumpus and thus had to deal with more uncertainty.

The behavioral strategies that the wumpus could employ were: 1) move to a gold bar and circle it clockwise; 2) move to a gold bar and circle it counter-clockwise; 3) attack (move toward) the agent; 4) do nothing; 5) hide behind an obstacle until the agent comes close and then attack. The wumpus will follow only one of these strategies throughout a given game.

LEARNING TO CHOOSE AGENT MOVES AND PREDICT WUMPUS MOVES

The main goal of this project was to learn agent moves in the two-player wumpus world game. For this learning application a learning algorithm was required that could operate in a supervised mode and yield good performance in the presence of noise. Although the algorithm was trained on problems from a simulated game, the learned concepts needed to be able to perform well in a robotic environment with noisy sensor readings.

Netica, a learning algorithm that meets these criteria, was selected. Netica is a commercial belief network that learns conditional probability relationships from training examples. Netica was chosen in particular because decisions needed to be made in the robot domain while some uncertainty existed. Belief networks were

constructed to represent the factors influencing the choice of action for the agent to take and the factors influencing the wumpus' next move. By incorporating the learning algorithm available in the Netica belief network system, the values of the belief nets could be earned automatically from randomly generated training examples. Given uncertainty, I was interested to see how well the belief networks performed. I increased the amount of uncertainty by adding more obstacles to the game world. After training, I compared how well Netica correctly determined the agent's best move in worlds with 1, 2, and 3 obstacles.

Using Netica, I hoped to provide the agent with the ability to autonomously elude the wumpus, avoid the pits and obstacles, grab the gold, and win the game. Netica enabled the agent to predict the wumpus' next move and use this information to decide what action the agent should take. The agent knew in advance the location of the pits and gold. If the agent wasn't confident about the location of the wumpus, the agent chose to use his next move to observe. This allowed the agent to use his camera to attempt to locate the wumpus. If the agent detected the wumpus with his camera, he used his sonar sensors to determine the exact location of the wumpus.

So that the agent wouldn't choose to move into the same location where the wumpus was moving which would result in the agent's death, it was important that the agent attempt to predict the wumpus' next move before the agent determined his next move. Netica was used to construct a belief network that could predict wumpus moves. To test this network, we randomly generated 40 cases, which encoded the location of the wumpus, gold, agent, and obstacles. The network used to predict wumpus moves can be seen in Figure 1.

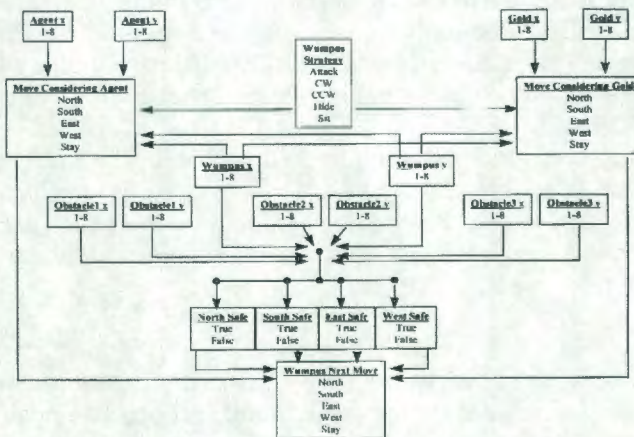


Figure 1

Next, the agent decided his best move by using a second belief network. We randomly generated 100 cases to test the learning algorithm. Each case was encoded in terms of the current agent position and gold position, the predicted wumpus next move, and the feasibility of each move as well as the level of confidence in the current location of the wumpus. The network is shown in figure 2. Each case was classified based on the best action that could be taken in the situation. Preferred moves brought the agent closer to the gold initially (closer to the [1, 1] location if the gold had been grabbed) without moving into the current wumpus square, the pit locations, or the predicted wumpus next location. Netica generates a value corresponding the desirability of each possible move and the feasibility of each move (the agent could not move into pit locations, obstacle locations, or current wumpus locations). The final node of the belief network uses the value generated to generate a set of values that corresponds to the probability of success for each possible agent action.

When simulated, it was easy to see all the variables that were needed to make a sound decision. The positions of the all the pits, obstacles, the gold bar, and the wumpus were known. However, the robots were not always able to obtain all the information needed to decide the optimal move. For example, the agent may not have been able to "see" the wumpus if the wumpus could not be detected by the agent's camera or sonar sensors. The agent needed to select an action based on this possibly incomplete information.

Netica uses algorithms for fast probabilistic inference in a compiled belief network based on research performed by Spiegelhalter et al (Spiegelhalter et al. 1993) and Neapolitan (Neapolitan 1990). Netica's learning algorithm is a type of supervised learning. Each training case represents an example world situation or event. Each feature that can be used to describe the training case becomes a node in the learned network. Although learning of belief networks consists of learning both the structure of the network and the conditional probability relationships at each node, currently Netica performs only parameter learning and assumes the structure is predefined.

Netica assumes that each conditional probability is independent, an assumption that can be fairly well maintained in the wumpus world game. The system will generate any specified number of training cases, which are classified by the user. Netica will then learn probability relationships that minimize total error based on the sample cases.

EVALUATION

Forty training examples were used to learn to predict wumpus moves. These examples had random values for the agent, gold, and obstacle positions, the current wumpus position, and the wumpus strategy. After classifying the training examples, ten-fold cross validation was used to evaluate the performance of the belief network. Netica was able to correctly predict the wumpus' next move in 98

percent of the cases.

For the network that determined best agent moves 100 training examples were used with random values for all of the objects in the environment. Again, ten-fold cross validation was used to evaluate the performance of the network. The 100 examples which had one obstacle in the environment were modified by increasing the number of obstacles to two and then three. The number of obstacles was increased to measure how well Netica could learn with uncertainty in the environment.

It was found that with one obstacle, Netica was able to correctly determine the agent's best move in 94 percent of the cases. Netica performed the same with two obstacles as with three obstacles and was able to make the best decision in 90 percent of those cases.

Ideally, I would like to have encoded the network with 100 percent raw data. For example, in figure 2, rather than having nodes that represent whether moving in a given direction is feasible, I would have preferred to let Netica determine this by providing the needed information about the environment. I would have preferred to have nodes representing the factors, which are the pit, obstacle, and wumpus locations that determine the feasibility of each move. The nodes were omitted due to physical memory constraints of the computers in our lab. While our computers were equipped with 256 Megabytes of RAM, they were still unable to handle all of the large probability tables that Netica generated.

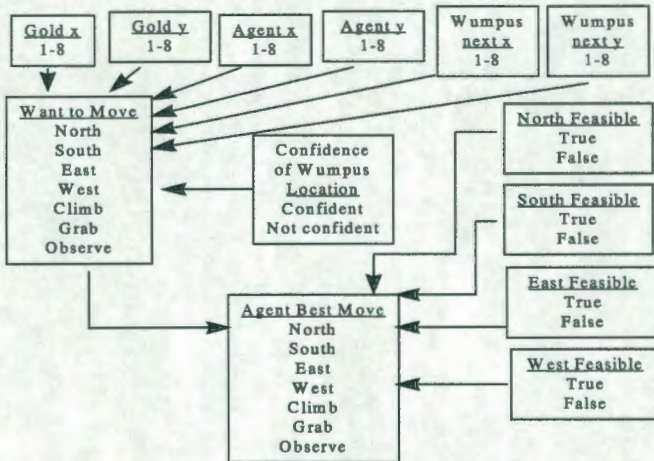


Figure 2

CONCLUSIONS

Netica was able to learn to predict wumpus moves and decide the best agent moves even when faced with uncertainty in the environment. While increasing the number of obstacles and, therefore, the amount of uncertainty, caused a drop in Netica's performance, the drop in performance was considered to be small considering the amount of uncertainty present in the environment. I would like to continue my research by adding more uncertainty to the environment and evaluating the performance of the belief network as it attempts to make decisions with increased uncertainty.

ACKNOWLEDGEMENTS

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Autobiographical Narratives Of Four Mexican-Americans And Their Educational Experiences: Shaping Attitudes Of Identity And Culture

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Abstract

Educational experiences are linked to cultural identity for Mexican-Americans, affecting their attitudes toward themselves and others. This project involves a comparative analysis of published autobiographical narratives of childhood, adolescent, and adult educational experiences written by Mexican-Americans. Two male and two female autobiographies written since the 1970's will be studied, using content analysis methods, to explore such topics as identity, prejudice, and obstacles faced by students. Additional sources in ethnography, sociology and statistics will also be consulted in order to place the autobiographies in a wider sociocultural context. This research has important implications for understanding issues of identity and socialization among Mexican-Americans because of its insights into personal experiences and life trajectories.

INTRODUCTION

Many Mexican-Americans not only have to struggle with prejudice and racism, but also with issues that deal with their own ethnic identity. One of the places where these issues become apparent is in the schooling system and in various other environments that house educational experiences, such as within the home and with the family. Home and school are places where many Mexican-Americans experience feelings of inadequacy and confusion over ethnic identity. Most of the time, the obstacles faced throughout a Mexican-American's lifetime can only be fully understood by peers or family members of the same cultural background. In order to better understand the lives of many Mexican-Americans, one of the best and no doubt one of the most direct ways to examine their lives is by studying and comparing personal narratives, or autobiographies that relate their own personal life experiences.

LITERATURE REVIEW

The use of published autobiographical narratives is one of the best ways to analyze issues concerning people with multiethnic backgrounds. The use of qualitative studies is an excellent source of learning about the cultural processes of bi-cultural individuals. There were several narratives available; among them the four that I have chosen for this research. I have noticed however that there were not as many as I had expected to find. Especially scarce are autobiographies written by Mexican-American women. Autobiographies written by Mexican-American men are much more available than those written by women (Acosta:1971; De La Fuente:1972; Galarza:1971; Garcia:1967;), and autobiographies written by women were scarce in many databases I searched while conducting this research. The easiest literature to find, and the literature most readily available, is social science literature on the values and customs of the Mexican culture. There was an abun-

dance of these sources, but most of them were written earlier than 1990. The most recent literature focused on fiction written by Mexican-Americans, including short stories and poems. Surprisingly, there was an abundance of literature written by "Chicana" women that expressed their feelings about being "twice a minority" (being a woman and Hispanic) in today's society. Problems with being women and Mexican-American were issues that filled much of the new literature written by women, including poems and short stories (Anzaldúa; Castillo-Speed). Books were the best of information, as the journal articles dealing with ethnic issues tended to focus on the experiences of Mexican immigrants and not so much on second generation Mexican-Americans. This posed a problem, as I was looking for specific effects that education had on second-generation Mexican-Americans. There were several books that were of great importance in conducting this research.

Anthropologists Carola and Marcelo Suarez-Orozco have written several books and journal articles dealing with issues concerning Hispanics (Suarez-Orozco, Marcelo 1987; 1989; Suarez-Orozco, Carola and Marcelo; 1995). One was the basis of this research (Marcelo and Carola Suarez-Orozco 1995:321-347). Among their focuses are issues dealing with second-generation Mexican-Americans and ethnographic studies dealing with Mexican-American youths. They have used structured and unstructured interviews, psychological tests, and ethnographic observations in their studies.

Susan E. Keefe and Amado M. Padilla have also written extensively on the issues of Mexican-American and Chicano ethnicity. Their book, Chicano Ethnicity (Keefe and Padilla;1987) is concerned with establishing a general theoretical framework for interpreting Mexican-American ethnicity and sociocultural change. They carefully document the multidimensional nature of Mexican-American ethnicity and the need to recognize the heterogeneity of the Mexican-American population. They also focus on family, the ethnic community, cultural awareness and ethnic loyalty of the Mexican-American. They have completed extensive research using ethnographic methods, case studies and statistical data. Keefe and Padilla have also explored the complex relationship between ethnicity, acculturation and assimilation and have succeeded in answering many questions involving Chicano youths such as: over time, do Mexican-Americans remain culturally distinctive in the United States? Do they perceive themselves as different, regardless of any objective measures of difference? What factors contribute to the separation or assimilation of Chicanos in American life? And what kinds of variation in these patterns exist within the Chicano population?

James Diego Vigil is a professor of anthropology at the University of Southern California and author of many studies on Chicano and Mexican-American youth. His work has concentrated on barrio gangs in Southern California, but he has also done case studies of other groups of Hispanic teens. He asserts that only by understanding the complex factors that give birth to issues of identity can they be resolved. He has had many years experience in the barrios as a youth worker, high school teacher, and researcher. In his studies he gathers life histories, conducts

interviews, and administers survey questionnaires and acts as a participant observer. His book, Barrio Gangs-Street Life and Identity in Southern California (Vigil; 1988) concentrates on issues dealing with isolation from the dominant culture, poverty, family stress, crowded households, peer pressure and struggle for self-identity.

RESEARCH METHODS

Ethnographic research and study has always been an important research tool in anthropology. There is no doubt that traditional ethnographic and participant observation methods are indeed a valuable part of qualitative research. However, autobiographical analysis has proved to be an essential link to exploring the life histories of people with ethnically diverse backgrounds. Autobiographies aid in understanding the formation, transitions and cultural processes that make up the lives of people throughout the world. This project involves a comparative analysis of published autobiographical narratives of childhood, adolescent, and adult schooling experiences written by second generation Mexican-Americans. Educational experiences as well as everyday life experiences were also explored. Schooling, educational and everyday life experiences are linked to cultural identity for Mexican-Americans, affecting their attitudes toward themselves and others. Two male and two female autobiographies written by Mexican-Americans since the 1970's were studied, using content analysis methods to explore such topics as identity, prejudice and obstacles faced that are a threat to them as well as their Mexican-American culture. Additional sources in ethnography, sociology and statistics were also consulted (Angrosino:1974; Denzin:1989; Kluckholn:1945; Ogbu:1974; Erikson:1950; Guerra:29(1):35-53; Deutsch:14(2)1-22; Marcell:64(8)323-327; Phinney:40(2)143-152; Mehan:25(2)91-117; Hubbard:25(2)91-117; Villanueva:25(2)91-117) in order to place the autobiographies in a wider sociocultural context. While analyzing these autobiographies, various themes came to attention. Among these topics were issues dealing with education, family, friends, culture, guilt, alienation, racism, prejudice, language, ethnic identity, religion, affirmative action and bilingual education. All of these topics are of equal importance in understanding Mexican American culture, and the lives of the four Mexican Americans chosen. However, the dominant theme in all four of the life histories is the issue of ethnic identity. Ethnic identity will be the primary focus of this essay, but issues dealing with family, culture, language, religion and racism will be interwoven to explore the importance of these subtopics when dealing with the subject of identity.

THE TEXTS

The autobiographies chosen for this analysis were written by Richard Rodriguez, Ruben Navarette, Gloria Lopez-Stafford, and Mary Helen Ponce. Richard Rodriguez, the author of Hunger for Memory - The Education of Richard Rodriguez, was born in the early 1950's, and he grew up in a predominantly white neighborhood in Sacramento, California. Although his family was considered to be lower middle class, they lived in a small house in the middle of a wealthy neigh-

borhood. Richard Rodriguez had a large extended family, but living within his home was only his nuclear family, consisting of his father, mother, and three brothers and sisters (he was the third of four children). Both of his parents were Mexican immigrants. His mother worked in the home and his father held manual labor positions. Richard Rodriguez grew up identifying with being a Mexican-American but now as a mature adult, he considers himself to be American. As a child and a young adult, Richard Rodriguez grew up a devout Catholic, but now identifies more with being a "Christian (1982:98)" than a Catholic. As a child and adolescent, he received an education at predominantly white Catholic schools, and he is highly educated, with degrees from Stanford and Columbia Universities. He did graduate work at the Warburg Institute (London) and the University of California (Berkeley). By profession Richard Rodriguez is a writer and a lecturer who lives in San Francisco, Ca. His essays have appeared in *The American Scholar*, *College English*, and in *Chicago* magazine.

Ruben Navarette, author of *A Darker Shade of Crimson - Odyssey of A Harvard Chicano* was born in the 1960's, and grew up in a Mexican-American neighborhood in Sanger, California. Socio-economically, his family was considered lower middle class, and lived in a house as a nuclear family. His parents were both Mexican immigrants, and like the parents of Rodriguez, his mother stayed at home, and father worked at manual labor positions. Ruben Navarette had two siblings; one sister, and one brother. He had a large extended family, including grandparents and many other relatives who lived apart from his nuclear family. Ruben Navarette grew up identifying with being "white," and during a college transition, he considered himself a "Chicano (1993:20-21)." He now associates with his ethnic background and identifies with being Mexican-American. As a child and as a young adult, Ruben Navarette was educated in predominantly Hispanic public schools and practiced the Catholic religion. He went on to receive a degree from Harvard University and at the time this book was written, Ruben Navarette was writing and speaking at various high schools on the importance of Mexican-Americans receiving a higher education.

Mary Helen Ponce, author of *Hoyt Street-An Autobiography*, was born in the early 1940's, and grew up in Pacoima, California. Ponce grew up in a Mexican-American neighborhood surrounded by friends and close family members. Her parents were both Mexican immigrants; her mother stayed at home and her father was employed as a manual laborer and as a lumber salesman. Ponce was from a large family of eleven children and they all lived in the same household. She had an extremely large extended family, which also included her adoptive grandmother - Doña Luisa, whom she lived with from time to time. As a child Ponce was educated at integrated schools, with whites and Hispanics being the two main ethnic groups. Ponce was a devout Catholic, as was her entire family. As a child, and now in her adult life, Ponce identifies with being a Mexican-American. Mary Helen Ponce graduated from California State University Northridge with a degree in Anthropology/Latin American Studies, and she received a Ph.D. in American Stud-

ies from the University of New Mexico. The mother of four children, she currently teaches literature and creative writing at the University of California, Santa Barbara.

Gloria Lopez-Stafford, the author of *A Place In El Paso*, was born in the late 1930's and she grew up in the Segundo Barrio in South El Paso, Texas (bordering Juarez, Mexico). This was a poverty stricken ghetto that housed many Mexican immigrants and Mexican-Americans. She was from a small nuclear family that included her mother, father and a brother named Carlos. Her mother died when she was very young, and until the time she was 12 she was raised by her father, friends and family members. After the age of 12, she was raised by her godmother and godfather (close friends of her mother). Her mother was a Mexican immigrant and her father was an Anglo-American citizen. Lopez-Stafford was a devout Catholic, and she was extremely poor. Her father made a living from selling used clothing, and from occasional odd jobs that he could find. Unaware for many years her father was not like her mother, "Mejicana" (she had just assumed he was Mexican), she associated herself with being mostly Mexican, but as she grew older she began to identify with being a Mexican-American (1996:45-53). There was no information available on the continued education or career path chosen by Gloria Lopez-Stafford.

FAMILY

All four of these writers, Richard Rodriguez, Ruben Navarrette, Jr., Mary Helen Ponce, and Gloria Lopez-Stafford, expressed the importance of their family, and the respect they had toward their parents. When they were children, they all remember spending time with their families, and remember the wonderful times spent with neighbors, relatives and grandparents. Family intimacy played a large role in all of these people's lives. Mary Helen Ponce, author of *Hoyt Street* remembers many joyous times spent with her family as a child. She speaks of many precious moments spent with her ten siblings and adoptive grandmother, Doña Luisa. She had a close family, and even though she may have had arguments with her sisters and brothers on occasion, she focuses on the intimate moments they shared together. She writes about her brother, Rito, whom she never saw as being affectionate, displaying an act of kind tenderness that forever changed the way she looked and felt about him.

One day I had just finished my oatmeal and ran outside to play. Rito, then about twenty, was sitting alone in the back door of los cuartitos, in pajamas and slippers. He called me over and asked, "Why isn't your hair combed?" I put my hand to my curly hair, embarrassed over having Rito see me so messy. He pulled me to him, unpinned my barrette, and said, "go get a brush and I will comb your hair." I did as he said, running past the kitchen and shouting at my startled mother "Donde esta el Peine?" Comb in hand I dashed outdoors again to where Rito awaited me. He sat me on his lap and began to unravel my messy hair. As he worked he spoke, his voice soft and low. "I don't like to see you with your

hair in your face," he told me. I remember his touch, the long tapered fingers that gently separated my Shirley Temple curls, the blue-green eyes that looked into mine, the dark wavy hair that fell across his smooth white forehead. Dear Rito, who by combing my messy hair had told me so much about himself (1993:18).

This was a typical example of the family memories that play a large part in her life story. It shows how important her family was to her and how the times they shared together were a tremendous influence on her. It is obvious that the memories of her family, which were so frequently expressed in her story were of such great importance that she wished to write about them in her autobiography.

Gloria Lopez-Stafford also writes about precious moments felt with her family. Although they were poor people, she remembers times spent with her family and friends, especially her brother, and describes them with admiration. She describes the fond memories she had of them as a child and feels that they were the most enriching times in her life. When it came to the issue of family, Gloria Lopez-Stafford and Mary Helen Ponce focused on the wonderful childhood memories of their families. They remember events that they all shared and described events with great detail.

Richard Rodriguez has also written about how his family life was sacred and how he felt such great intimacy within it, but he also remembers the alienation of his family by their predominantly white neighbors in a middle-class Sacramento, California neighborhood. Richard Rodriguez states:

I was an extremely happy child at home. I remember many nights when my father would come back from work, and I'd hear him call out to my mother in Spanish, sounding relieved. With mis hermanos I would come running into the room where he was with my mother. Our laughing (so deep with pleasure!) became screaming. Like others who know the pain of public alienation, we transformed the knowledge of our public separateness and made it consoling – the reminder of intimacy (1982:18).

Richard Rodriguez comments on the intimate times shared with his family, but focuses on the more negative aspect of these events. He has written that his family life was sacred and that he felt a level of intimacy when he was with his parents, but he also states that with his school experiences all that changed. When Richard Rodriguez was enrolled into a predominantly white Catholic school, away from his family and Mexican-American peers, he began to experience acculturation that would eventually lead to assimilation (acculturation refers to the acceptance of cultural patterns and traits and assimilation refers to the social, economic, and political integration of an ethnic minority group member into main-stream society 1987:18). He was forced to speak English at school and Spanish was soon eliminated in his home because, according to the school (and his American teachers), "only English was spoken in America (1982:12)." According to Richard Rodriguez, this event forever changed his life (1982:42). He began to feel embarrassment over

his family's inability to speak English correctly, and began to admire his teachers more than his own parents. He no longer admired his parents or respected them, but he was ashamed of them. He felt betrayed because his family was forcing him to give up the only life he had ever known: a life where he spoke Spanish, shared intimate moments with his siblings, and felt a sense of belonging. For Richard Rodriguez, the loss of family intimacy caused him to feel anger and embarrassment that eventually lead to feelings of guilt and shame because he felt like he had betrayed the most important thing to him: his family.

Ruben Navarrette also felt that with the more schooling and education he received in his lifetime, the more he drifted from his family. He expressed feelings of anger toward them and throughout his life struggled with the loss of emotional closeness he had felt with his family. Richard Rodriguez and Ruben Navarrette focused more on the subject of identity in dealing with issues of family. They describe their schooling experiences as being the culprits for their loss of intimacy with family, and they express their bitterness throughout their narratives. Mary Helen Ponce remembers being embarrassed because her parents had funny long names, and she and Gloria Lopez-Stafford both remember being taunted and teased at school; however, they did not suffer anger towards their family because of this. Both of the women have had schooling experiences that have affected their identity, but where family was concerned, they seemed to hold on to their relationships whereas the men seemed to drift apart.

Research literature confirms that for most Mexican-Americans the family is a highly valued institution. Brussel concludes the most important role of the individual is his familial role (Brussel:1985). An ethnographic study of Latino youth by Carola and Marcelo Suarez-Orozco showed that family played a major role in the lives of many Mexican-American youths. In their studies, Marcelo and Carola Suarez-Orozco found that Latino youths still held a great amount of respect for their parents and elders, and felt a sense of obligation toward their family. This was maintained among second-generation Mexican-American youths who have been exposed to the dominant American culture (Marcelo and Carola Suarez-Orozco 1997:116). This can explain why some Latino youths are unaffected by acculturation when dealing with issues of family (for example Mary Helen Ponce and Gloria Lopez Stafford). Although it is believed by some scholars who study Mexican-American tradition that family has remained an important facet of Mexican culture, it has not escaped the effects of acculturation into a new dominant society. In the cases of Richard Rodriguez and Ruben Navarrette, they showed an attitude toward their family that is atypical of Mexican-American households, but it can be an effect of assimilation. Marcelo and Carola Suarez-Orozco, in a study dealing with Latino ethnic identity have noted that Richard Rodriguez is a prime example of a Mexican-American who chooses to "move away from the traditional sources of support" and attempts to integrate himself into the new dominant society (Marcelo and Carola Suarez-Orozco 1997:337).

Susan E. Keefe and Amado M. Padilla have compared Mexican-American

and Anglo issues of family and identity (Keefe and Padilla; 1987:14). They stated that "While descriptions abound in which the Mexican American family is judged to be "stronger" than the Anglo family, this is nevertheless coupled with the notion that the Mexican-American family is declining with acculturation, assimilation and urbanization. The process of change may affect one or more groups and furthermore, it may affect any cultural trait: cultural patterns, behavior patterns, norms and/or values (Keefe and Padilla 1995:14)." This is an example of how schooling experiences have gradually lessened the importance of family for Richard Rodriguez and Ruben Navarrette. In the case of Richard Rodriguez and Ruben Navarrette schooling experiences have weakened the strong kinship and family ties that were a signature for their traditional Mexican American households. Intimacy and closeness with family are lost with assimilation into a new school environment. The women focused on the more positive aspects of their childhood memories, and although they describe events dealing with their family and racism, they have not chosen to reject their heritage, but to hold on to it as much as possible.

EDUCATION AND LANGUAGE

Carola and Marcelo Suarez-Orozco have contended that when learning the language and culture of a dominant group it is symbolically equated with giving up one's ethnic identity (Carola and Marcelo Suarez-Orozco 1995:73). Language was an important facet of the ethnic identity of these four individuals in their narratives. Each individual spoke of feeling intimacy and comfort while speaking Spanish. In all four narratives, Spanish phrases were used over and over as the writers were reminded of how they had used Spanish words to describe objects and special events. In some cases the words written in Spanish to describe people, places and things were used in context with feelings of emotion (see above excerpt - Ponce). The issue of language and eliminating bilingual education in schools has remained a controversial one. Some feel that it will in time better the individual, but in these four cases it has hurt them by robbing them of a part of their culture that was held sacred by their Mexican-American families. Language is a connection that these people have to their heritage. They have assimilated into American culture, in part, by attending schools that do not accommodate people with different ethnic backgrounds.

They have not, however, all assimilated into this environment without some sort of resistance. Gloria Lopez-Stafford writes about her childhood, and being forced to use the English language in place of her native language. She writes of her experiences being punished for using Spanish while speaking to her friends and feeling confused about why she could not speak in Spanish. For many years she struggled with English and for many years also refused to use it. She writes about an experience that she had with a teacher who one day sent her home with a note telling her father she refused to speak English:

Father: "The note the teacher sent home says that you will not speak English. She says that everyone speaks for you. And she says that you talk all the time, but in Spanish! It's been a month since school

started and she says you will not cooperate. She says she is going to have to punish you. She wrote to inform me that she is at the end of her patience with you," Palm said.

Gloria: "So that is what the mugre, dirty, note said. I thought she liked me," I said as I thought of how she and I grinned at each other every day. I didn't know what she was saying and she didn't know what I was saying. I didn't like it and I hated using it. "My friends and I don't need to speak it. We have our own way of speaking" (1996:44).

Gloria Lopez Stafford was not the only one who disliked speaking English. As stated before, Richard Rodriguez felt a loss when he was forced to speak English and ended up feeling anger toward his parents because of this. He also felt that he lost a major part of his ethnic identity after being forced to give up Spanish. All four of the writers were second generation Mexican-Americans in predominantly white schools. They were forced to assimilate into an environment that was manufactured for white (Anglo) English speaking students. Ruben Navarrette and Gloria Lopez-Stafford both felt confusion and a loss of identity when forced to give up Spanish. They felt that one of the ways to preserve one's ethnic identity was through the use of their native and family language. These narratives are examples of just how important language is to Mexican-Americans and how schools forced them to give up a part of their identity and a bond with people who speak the same language.

The loss of their language has also led to confusion and embarrassment over ethnic identity and loss of culture. In Ruben Navarrette's Odyssey of a Harvard Chicano, he writes of how while in college he would be with peers of Mexican descent at a Mexican restaurant, and order the least difficult plate to pronounce because he didn't want them to know he didn't speak Spanish very well. Both Richard Rodriguez and Ruben Navarrette remember being called "Pocho" (a word that means bland) by their relatives and parents because they had lost the ability to speak Spanish. Richard Rodriguez writes:

I remembered too well that education had changed my family's life. Once she was sure that her children knew English, my mother would tell us "You should keep your Spanish." Voices playfully groaned in response. "¡Pochos!" My mother would tease. I listened silently (1982: 30).

The loss of language and its connection with ethnic identity have also been noted in other studies dealing with Mexican-Americans. In an ethnographic study by James Diego Vigil of Mexican-American students, he notes that loss of language was a major factor dealing with the issue of identity. Vigil states that: "Equally common in informants' narratives is embarrassment about their inability to speak Spanish." While interviewing one of his informants Vigil noted that: "With some amount of apprehension, as if betraying his ethnic loyalty, one male said that he was the only solely English-speaking member of his family of five siblings." This ethnographic

study is another example of how the elimination of Spanish in schools can affect one's ethnic identity, and how it can lead to the elimination of one culture while absorbing another which is viewed as superior.

RACISM AND ETHNIC IDENTITY

The subject of racism did not go unnoticed in these four autobiographies. These autobiographies were of second generation Mexican-Americans, and, in all but one case, the parents were Mexican immigrants. Their parents came to the United States in search of a better life for themselves and for their families. They were people who were different because of skin color and because they brought with them customs, rituals, beliefs that were unfamiliar to the dominant society. Because of this, they all experienced some sort of prejudice. One of the main issues in each narrative was the topic of skin color. Richard Rodriguez and Ruben Navarrette both spoke about how their parents believed that dark skin was a symbol of poverty. As children they were forced (by their parents) to stay out of the sun and wear long sleeved shirts as to not darken their skin. Their parents did this in order to protect them from prejudicial comments made to them by their peers, schoolmates and neighbors. In each case, they felt that the lighter one's skin was the better looking and better off one was (An attitude their parents had because of racism they experienced as Mexican immigrants to the United States). Mary Helen Ponce remembers how her sisters would wear a light shade of Max Factor makeup in order to look like the fair skinned actresses of the time. Gloria Lopez-Stafford went to predominantly Mexican-American schools, and never felt out of place until she went to a predominantly white middle class school. She remembers being teased at school by children for having dark skin and a funny language. A turning point in her life was when a white schoolmate told her she couldn't be her friend because her mother didn't like "Mexicans" (1996:195-196). This event caused her to question her ethnic identity. She felt lost, confused and unable to find "her lugar, her place." She writes:

I couldn't be friends with Barbara because I was Mexican. I didn't understand. Linda and I walked home. All I could think about was that there was a problem because I was Mexican. I didn't want to think anymore. Maybe I could figure it out the next day. My mother and father were listening to the radio as I walked in the living room. I stood at the door after I closed it. I looked at my mother as I had never looked at her before. She was Mexican and a part of what I had always known. Somehow I was different than I had been two hours earlier (1996: 195-196).

Many of their experiences dealing with racism and prejudice took place at school, but they did not all occur there. Socialization experiences at home can also affect one's identity. Richard Rodriguez questioned his identity through experiences at school and at home. He is naturally dark-skinned and darker in color than many of his family members. He remembers aunts coming to his home and giving his mother advice on how to lighten his skin. He writes about one particular experience con-

cerning his identity over having dark skin:

I was to grow up an ugly child. Or one who thought of himself as being ugly. (Feo.) One night when I was eleven or twelve years old, I locked myself in the bathroom and carefully regarded my reflection in the mirror over the sink. Without any pleasure I studied my skin. I turned on the faucet. (In my mind I heard the swirling voices of aunts, and even my mother's voice, whispering, whispering incessantly about lemon juice solutions and dark, feo children). With a bar of soap, I fashioned a thick ball of lather. I began soaping my arms. I took my father's straight razor out of the medicine cabinet. Slowly, with steady deliberateness, I put the blade against my flesh, pressed it as close as I could without cutting, and moved it up and down across my skin to see if I could get out, somehow lessen, the dark (1982:124).

This marks how educational experiences in the home, schooling and life experiences of children can affect their ethnic identity. Because of racism, all four of these writers expressed how having dark skin was a symbol of poverty and inferiority. Richard Rodriguez has stated that was partly due to his parents reinforcing belief that dark skin was ugly that caused him to feel inadequate compared to someone who is was not as dark as he was. It is events such as these in school and at home that has caused these writers, as children, to question their identity and believe that there was something wrong with them because they were Mexican.

All four of these writers dealt with issues of prejudice and have questioned ethnic identity. In the case of Ruben Navarrette, it was educational experiences in high school and in college that made him question his ethnic identity. Ruben Navarrette was an American citizen of Mexican descent, so he was technically a Mexican-American, but because the majority of his friends were white, he also identified himself as being "white (1993:20-26)." It was not until he experienced racism in high school and college that he began to associate himself with being "Mexican-American (1993:19-21)." He writes about life as a teenager, feeling accepted by his white peers and describes most of his adolescent experiences as being very pleasant. It was not until he was accepted into Harvard University that he experienced alienation from his closest friends (they were all white). They believed that the only reason he was accepted to Harvard was because of "Affirmative Action." Their jealousy and prejudice over his acceptance and their rejection had proved to him that he was in fact "different." This experience affected him in the sense that his entire ethnic identity had changed. He became aware of prejudices that he never thought he would experience, which in turn led him to accept a Mexican-American ethnicity that he had never before claimed. Ruben Navarrette actually felt more comfortable expressing himself as an American because he had grown up in the United States. Nevertheless, because of prejudice against his ethnicity (by Anglos), he felt as if he would be more accepted among peers with the same ethnic background. This later led to confusion over ethnic identity for him. He began to ques-

tion his right to claim a Mexican heritage or an American heritage because he was not truly either. Ruben Navarrette writes:

Still, there was a problem—a major one. Just as I was beginning to realize my contribution to the Harvard mosaic and overcome adolescent insecurities, I felt within me a new sense of illegitimacy. I worried about my ability, indeed about the ability of all Mexican-Americans on campus, to honor our obligation. I felt that I was being asked to produce something that, at the time, I myself barely understood. Not my culture really, but my Mexican grandfather's. My culture mirrored that of my roommate from Connecticut. I ate hamburgers, not tacos. I watched MTV and CNN, not Univision. My cultural icon was Bruce Springsteen, not Vicente Fernandez. After all, I was like the Boss, I was born in the USA (1993: 83-84).

This is an identity crisis that many Mexican-Americans feel throughout their life. Marcelo and Carola Suarez-Orozco have examined ethnic identity among Mexican-American youths who deal with emotions similar to these (Carola and Marcelo Suarez-Orozco 1995:337). By developing a defensive identity, many second-generation youths reject the society that rejects them and seek refuge in others sharing their own predicament (Carola and Marcelo Suarez-Orozco 1997:337). "Little within the Chicano community prepares them for the competitive, individualistic Anglo world of social relationships in which they must face lack of acceptance and some degree of discrimination—they become caught between two worlds" (Carola and Marcelo Suarez-Orozco 1997:337). In his ethnographic study of Mexican-American youth, James Vigil has noted that issues of ethnic identity among second-generation Mexican-American youth is often more stressful both psychologically and socially than they are for first generation Mexican-Americans (Vigil 1994:41). The first generations of Mexicans shared enough in common to be considered a subculture, but second generation, that is offspring of the immigrants, are likely to experience more culture conflict (Vigil 1997:38). Culture conflict is both a psychological (individual) and social (group) phenomenon, comprised of changes involving a number of alternatives and options, and is reflective of the development of the second sub-cultural strata. The alternative outcomes include total assimilation and identification with Anglo-American lifeways and, more commonly, a new type of ethnic identity which incorporates elements of Mexican and Anglo-American culture (Vigil 1994:392).

The issue of racism and its connection with ethnic identity is of course a complicated one. Schooling experiences lead young Mexican-American children to confront problems dealing with ethnic identity. It has caused problems with feelings of inadequacy, shame, guilt, alienation confusion, and acceptance by peers (peers being those of Mexican descent and Anglo). All four of these writers experienced some racism, some in different ways than others, but it should be noted that they all experienced the highest levels of racism and prejudice in schooling envi-

ronments, which eventually led to questions and doubts over ethnic identity.

RELIGION

Religion played a major role in the narratives of Richard Rodriguez, Lopez-Stafford, and Ponce, but it was especially mentioned in the narratives written by the two women. I have noticed in the autobiographies by Ponce, Gloria Lopez-Stafford and Richard Rodriguez that their childhood experiences centered on churches, priests, Catholicism, and the mention of curanderas (folk healers) and ancient ritualistic practices dealing with these healers. They made mention to symbolic objects being of great importance such as rosaries and crucifixes, and as a child Richard Rodriguez even dedicated each school lesson to Mary, Jesus or God. This was not surprising as the majority of Mexican immigrants and Mexican-Americans are of the Catholic religion. These narratives show that religion provides a sense of ease and understanding when questioning one's identity. For these writers as children, it is as if churches were a place of neutral ground that could not be labeled as superior or inferior. Richard Rodriguez remembers:

When all else was different for me (as a scholarship boy) between the two worlds of my life, the Church provided an essential link. During my first months in school, I remember being struck by the fact that – although they worshipped in English- the nuns and my classmates shared my family's religion: The gringos were, in some way, like me, catolicos (1982: 82).

In the narrative of Richard Rodriguez, he identified with having two "selves." His "private" self and his "public" self. His private self was the persona that he had when he was in the privacy of his own home. This self allowed him to be part of his Mexican heritage because he was around his family. His public self allowed him to participate in the "Anglo" world outside his home. When he was at church he felt at ease with his identity. The Church acted like a bridge between two worlds. It served as a tool that allowed him to move between the two worlds of which he was a part. Since he went to Catholic school as a child, he would focus on the religious aspect of it, in order to feel at ease with his identity. He was around children that were so different from him – but at the same time they were a little the same – they were Catholics too.

For Gloria Lopez-Stafford, her church was also a special place. Throughout her entire narrative, she made reference to her priest, Padre Luna, and to her church. She used her church as a place of refuge when she felt confused, and spoke to her priest when she felt unsure of herself. When she first experienced racism at school and began to question her identity, it was her Church and her priest that comforted her. Lopez-Stafford remembered the time when she was first confronted with racism, and the first place she thought of to go was her church, and to see her favorite priest, Padre Luna. She writes:

Padre Luna: "Gloria, Mi'ja? What is wrong my child?" he asked. "Are you alright?" He looked right into my face. Gloria: "Yes Padre, I am all right. It is my soul that isn't. Padre, I don't know who

I am anymore. I asked this little Anglo girl who I like so much... I wanted to be her friend and I even wished she was my sister. I asked her if she could play with me and she said she couldn't. She said that her mother does not want any Mexicans around their house because some foreigners had hurt her. And I don't understand," I softly said to him. "Padre, which am I? Mexican or American? Which one do I say I am?" I wanted a simple answer.

Padre Luna: "Gloria, there are only two things in the world that never change: love and hate. Everyone knows them. They learn them from their parents and their group. And, many times, children can't choose which they want to feel. They are told every day of their lives who they can love and who they must hate. He coughed and looked at me. You will know which one they feel by how much they accept you. Don't worry, the good always find each other" (1996:201-204).

The church was a special place for Gloria Lopez-Stafford. It is shown in her autobiography that her church and her Catholic religion played a great role in influencing her life. Her priest, although not a family member, was considered to be a close personal friend that helped her through many troubled times.

Mary Helen Ponce also wrote about the importance of the church in her life. For these two women, religion played such a big role that their life histories overflow with written accounts of religious experiences. Mary Helen Ponce writes about how the ritual of Sunday mass was of great importance to her and how every religious holiday was celebrated in her family. Sunday Mass was such an important holiday in her family that a whole day, Saturday was used as a preparation day. Ponce writes about many religious experiences that were a part of her memories, but one experience in particular notes how religion can be affected by acculturation into a new society. Ponce writes:

Our church did not have a statue of the Virgin of Guadalupe. This really bothered me. After all, were we not "Mejicanos?" Father Mueller constantly assured me that the Virgin Mary and Guadalupe were one and the same, but I never believed him. How could they be? One was from Mexico and had appeared to an Indian named Juan Diego. And the Other? She was an American, with blue eyes and blonde hair. Although I accepted them both as holy women, I actually preferred the Virgin Mary; she at least spoke English (1993:143).

Religion was a strong presence in the narratives studied. In three out of the four, the writer's lives were centered around religious experiences, and it was a part of their identity in which they felt no shame or confusion. Religion did not escape the effects of acculturation in these narratives (as noted in Ponce's example), but it remained a positive aspect in these people's lives, and in some cases it was used as a safety net. It helped them in dealing with issues of ethnic identity, as they

looked to the Catholic Church for guidance and comfort. While the issue of religion dealing with ethnic identity is not one that has been sufficiently studied. It still remains one of the more important issues in the daily lives of these Mexican-Americans. In analyzing these narratives, it has become obvious that the topic deserves better study.

CULTURE, EDUCATION, AND ETHNIC IDENTITY

The issue of culture was an extremely important aspect of these narratives. The narratives focused on several issues dealing with both Mexican and American culture, including that of culture and education in dealing with ethnic identity. As stated earlier, all of these writers were children of one or more Mexican immigrants. As children, they were raised around family, friends and neighbors who were all a part of the same background. It was not until these children started school that they were faced with a new culture. They were all raised in the United States, but until the time they started school they were sheltered from the predominately white society. School forced them to assimilate into a society in which their culture was not the norm. With the assimilation to a new culture they had many new experiences that forced them to learn about a culture so different from their own. It was also while in school that they began to experience loss of culture. In each case, the more the children were educated and schooled in predominantly white schools, the more that they began to reject their Mexican Culture. As in the case of Richard Rodriguez, he was clearly aware of his acculturation into a dominant society. He began to reject his Mexican background and felt more attracted to American Culture. Richard Rodriguez has stated that it is impossible to assimilate into a dominant society and be able to maintain a sense of belonging in two cultures. In the case of Ruben Navarrette, he did not want to believe that this was possible. He did everything to prove that this would not happen to him, but in the end he began to feel that Richard Rodriguez was right (he had read *Hunger of Memory*) and that he, too, was losing his sense of belonging around his family and to his Mexican culture. Both of these men have written about their harsh schooling experiences and struggles with ethnic identity. Over the years, the problems they experienced dealing with racism and confusion over identity have helped them to express their feelings by writing about these particular experiences. They both expressed that they began to drift away from their families and Mexican background the more educated they became. School gave them the doorway to a more socially advanced culture that did not include the working class immigrant backgrounds that they both shared. They began to feel more comfortable in an Anglo society, where their culture was not the norm. This forced them, willingly or not, to question their own heritage and made it difficult to justify to themselves why they needed to hold on to a socially disadvantaged culture. Richard Rodriguez has written about the guilt he has felt and his shame for feeling more attracted to American culture. Ruben Navarrette also had feelings of shame and guilt over his loss of culture. He too felt that the American culture was more appealing than his Mexican heritage. They both expressed guilt over these feelings of betrayal of their ethnic identity and fami-

lies, but could not deny that their Mexican-American ethnic identity was diminishing.

Mary Helen Ponce and Gloria Lopez-Stafford have also written about experiences where loss of culture was occurring. They both wrote about schooling experiences, in which they began to view American ways as superior to their own. They spoke about how, while in grammar school, the Anglo children were so sure of themselves, and how they too wanted to be like them. They mentioned how their traditions and customs were old-fashioned and outdated, and they wanted to be a part of a more modern society. They would be made fun of in school and were embarrassed by the types of clothing they wore and were more impressed by American fashion than their own. These women did not mention their awareness of loss of culture, nor did they openly mention their loss of ethnic identity. Although they did not openly express it in great detail, as did the male writers, it was expressed in their stories of childhood experiences. Schooling was a major influence in the lives of these women, equally as much as it was an influence in the lives of Ruben Navarrette and Richard Rodriguez.

All of the narratives mentioned different ways the autobiographers experienced loss of culture. One of the main differences that I found in analyzing these narratives was that Ruben Navarrette and Richard Rodriguez seemed much more bitter and aware of issues dealing with ethnic identity. They seemed more aware of affects of assimilation as opposed to the women. Although this may have been the case, they all, however, did experience loss of culture and ethnic identity while attending predominantly white schools. Each writer began to question his or her identity, and view the dominant American culture as more appealing than his or her own.

In ethnographic studies pertaining to Mexican-American youths, Susan E. Keefe and Amado M. Padilla have noticed various trends similar to those of the narratives studied (Keefe and Padilla; 1987). Although Keefe and Padilla do not emphasize women's views opposed to men's views of acculturation, they focus on other aspects dealing with ethnic identity. One of the most important trends they noticed in their studies was the obvious and gradual decline in awareness of Mexican culture from generation to generation. They noted that the awareness of the Mexican culture declines from generation to generation with the loss occurring largely among second generation Mexican-Americans (Padilla and Keefe 1987:8). Carola and Marcelo Suarez-Orozco have found in their studies that for some second generation youths who are successful and "make it" in the idioms of the dominant society, issues of guilt often become important. They also found that often youths will identify with the oppressing dominant group and attempt to join them leaving their own ethnic group behind. Schools tend to be the dominant places where loss of culture becomes a problem and where issues of identity become a factor. It is obvious that children must be schooled. But, it must be pointed out that it was the schooling of these four writers that caused them to doubt their ethnic identity and their heritage, and that has led them to accept the dominant culture as

more appealing than their own. Schools are places where the acculturation process is most likely to occur, and it is with this process that the Mexican culture of these four Mexican-Americans has changed and ethnic identity been questioned.

CONCLUSIONS AND POSSIBILITIES FOR FUTURE RESEARCH

In my analysis of the narratives of Ruben Navarrete, Richard Rodriguez, Gloria Lopez-Stafford and Mary Helen Ponce, many themes and issues emerged, including family, education, religion, culture racism, and peers. The main focus of the investigation was, however, the issue of ethnic identity. The topics dealing with family, culture, language, religion and racism were all interwoven to explore how important these subtopics were when dealing with the subject of identity. The female writers tended to focus on their childhood, religion and peers more so than did the male writers. Richard Rodriguez and Ruben Navarrete tended to focus more on the negative aspects of their life experiences as well as issues of ethnic identity. The male writers seemed to be more aware of their ethnic identity and the issues that arise from the confusion they felt over it. These second-generation Mexican-American narratives illustrate that ethnic identity played a major role in personal lives and experiences. Navarrete, Rodriguez, Lopez-Stafford, and Ponce have grown up struggling with the concept that they are not only part of one culture but two: Mexican and American. They have dealt with many obstacles in their lifetime that are unique to Mexican-Americans, and the problems they face throughout their lifetime can only be truly understood by people with similar ethnic backgrounds. Educational and schooling experiences of Mexican-Americans have no doubt affected them in many ways. These experiences have shaped and molded the way they identify with their Mexican heritage. In order to better understand the lives of Mexican-Americans and issues dealing with ethnic identity and culture, one of the best, and no doubt one of the most direct, ways to do this is by studying and analyzing personal narratives, such as these.

For further research, I believe that it would be beneficial to continue to study Mexican-American issues. With life histories as a major source of information, I believe that it can prove useful in exploring other topics that deal with second-generation Mexican-Americans. Life histories can provide a first hand look at the formation of attitudes and cultural processes of bicultural individuals. The issue of bicultural ethnic identity can also be studied in a wider sociocultural context. Through ethnographic research and participant observation there is much about a culture that can be understood, but autobiographical narratives provide an insider's view of the feelings and experiences that make up who these people truly are and how they express themselves. This can also prove useful to many Mexican Americans, as they would be able to make their ideas and values better understood to those who are unaware of them. With further ethnographic studies and examinations of life histories, issues that affect members of ethnically diverse peoples can be better understood.

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Taking it on the Road: State Legislative Leaders and Campaign Related Activities

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Abstract

While there was a time not so long ago that a person could get elected to the state legislature with no more than a few dollars, a good pair of walking shoes and a will to win, those days have all but disappeared. Today, it is not uncommon for a person to spend more than a hundred thousand dollars on mailings, consultants, polls and media. As the expense of campaigns has risen, so has the pressure of legislative leaders to get involved in those campaigns. Using a survey of those leaders, we examine the degree to which they engage in campaign related activities, as well as the factors associated with such engagement. The results suggest that campaign-related activities, particularly agenda setting and fund raising, are integral parts of state legislative leadership. Further, such activities are more likely to be emphasized in states with more competitive parties, more women legislators and smaller legislative districts. The responsibility of such activities appears to fall disproportionately on the shoulders of the key leaders in each chamber. In short, while campaign activities are an important component of leadership for all state legislative leaders, it is more important in those chambers or districts where it is most useful, and in those positions with the most power.

There was a time not long ago when a candidate could get elected to some state legislatures with a few hundred dollars, a couple of pairs of good walking shoes and a catchy slogan on an emery board or funeral fan. Those times are now long gone. In today's modern era of campaigning it seems like the people who win are the people who can spend the most money and get their message, positive or negative, out to the voters.

As the cost (in time, effort and money) of a seat in the state legislature has gone up, so has the expectation that state legislative leaders will take an active role in those campaigns. In fact, legislative graveyards are full of leaders who failed to gain or maintain majority status in their chamber, regardless of their other leadership attributes or efforts. Many legislators, journalists and scholars believe that such activities have become the most important part of leadership in many state legislatures.

The purpose of this study is to discover if that is indeed the case, and to determine the conditions under which such activities are most likely to occur. In order to achieve this goal, we surveyed 334 state legislative leaders regarding their involvement in the campaigns of their members. About half (48%) of those leaders responded. The survey results are examined to see the degree to which leaders are involved in such activities and then a scale of activities is regressed on various institutional, political and positional characteristics to determine the conditions under which such activity is most likely to take place.

What We Already Know About Campaigns and Leaders

A look at the literature regarding campaign finance and leadership reveals

three accepted facts crucial to this project. First, modern campaigns are expensive and contested. Second, campaign activities have become an integral part of state legislative leadership. Finally, the degree to which a leader focuses his or her attention on campaign activities will vary considerably across positioning states and institutions.

Literature Review

The Modern State Legislative Campaign

In today's world of modern technologies everything has changed. Television has brought everything into the view of the general public, including political campaigns. So, in order to have a successful campaign one must use the media sources, which takes increased funds. An article titled "California's Political Gold Rush" in the February, 1996 issue of *Time* magazine reports on how the increased costs of campaigns has become the new standard for the modern campaign. This *Time* magazine article reports on how increased competition forces candidates to spend excess amounts of money on publicizing themselves in order to win the election and that the increased spending is then paid for by an endless line of fund-raisers, "The crowded calendars point up the extent to which California's legislative agenda has become a vehicle for ceaseless and extravagant campaign fundraising." Tommy Neal in an article entitled, "The Sky-High Cost of Campaigns," states that, "State legislators who a generation ago walked around the district passing out combs and pencils bearing their names are now hiring full-time campaign managers, pollsters, advertising specialists and direct mail experts." This is just another case of how the price for a seat in the state legislature has changed. So, the modern campaign can be described as an endless array of fund-raisers conducted to pay for extra staff and all the media involved in winning a competitive seat.

Alan Rosenthal wrote in his book *The Decline of Representative Democracy*: "Even at the state legislative level [campaigns] are extremely expensive and becoming more so at a tremendous rate." (180) Thompson agrees with this in his book *Campaign Finance in State Legislative Elections*, as does Carl E van Horn in his book *The State of The States*.

Leaders and Campaign Activities

Basically, we wanted to know if legislative leaders were playing a more important role in raising funds for campaigns. In an article entitled, "Understanding Legislative Leadership Beyond the Chamber: The Members' Perspective," Thomas Little explains how the leader's role is much more than that of conducting their own campaign. "These leaders are expected to go beyond the legislative institution, representing the positions, interests, and images of the legislature and its members to other external groups and policy activists." He shows how leaders are judged by how well they do these and other duties in addition to their institutional responsibilities. In another article, "The Decline of Representative Democracy," Alan Rosenthal points out that "The leaders' principal responsibilities, as far as their legislative colleagues are concerned, is to help them get elected..." which sums up the expected extracurricular activities of the leader's role nicely. Although leaders

may not like raising party money, they are expected to play an important role in raising campaign funds. One state leader commented by saying "The leader's own campaign is usually the race that suffers when the leader is involved in raising money for the caucus funds." So, even though this activity could hurt them personally, they play the increased role in campaigns.

Joel Thompson reveals in his book, Campaign Financing in State Legislative Elections, how party leaders control where money goes. He states that the Democratic party in California alone doles out 3.6 million dollars in campaign contributions. Legislative Party Campaign Committees in the American States by Anthony Gierzynski discusses this same point.

Factors Related to Leadership Campaign Activities

This section of the study consists three different subsections. The first subsection is designated institutional characteristics, which contains three different factors found to be useful. The first factor is legislative professionalism. Tommy Neal's article entitled, "The Sky-High Cost of Campaigns," published in the May, 1992 issue of State Legislatures, quotes Herbert Alexander as saying, "Professionalization is a major factor in the high cost of campaigns." Cindy Rosenthal in another article, "Where's the Party?," published in the June, 1994 issue of the same magazine talks about how legislators from several different states have found enough money to hire large, year-round professional staffs. Another factor that is believed to be important to this study is the percentage of women holding seats in a legislature. The authors believe that women have to play a more active role in raising campaign funds because it is more difficult for a female candidate to get support. An article written by Anthony Gierzynski and Paulette Budreck entitled, "Women Legislative Caucus and Leadership Campaign Committees," (Women & Politics 1995) supports this idea. In it they state, "Women legislators' campaign activities include both campaign contributions and other nonmonetary assistance such as campaigning and assistance in fund raising"(23).

Barbara Burrell also agrees. As she points out in her book entitled, Women and Elective Office, "Contrary to conventional wisdom, empirical evidence has shown that while differences in financial support exist during the contemporary era, current women candidates now raise and spend as much or more than their male counterparts." (27). The last factor considered in this section of our study is district size. District size is important because there are more places to raise money in a larger district. Gary Moncrief writes in Campaign Finance in State Legislative Elections, "The larger the population one tries to reach in a campaign, the greater the campaign costs" (44).

The next set of factors considered in this study were named political characteristics. This set contains two subsets. The first, legislative competition, is believed important because greater competition results in more money raised and spent on the campaign. In the article "Where's the Party?" in the June, 1994 issue of State Legislature, Cindy Rosenthal writes that "Heightened party competition has

an impact" (32). She points out that as competition intensifies caucus committees expand and flourish. The second subset concerns the percentage of individual seats that are competitive in each legislature. This subset is important because if a race is close for an important seat then the legislative leaders of the contested party will be asked to help raise money for the general campaign. Gary Moncrief is quick to point this out in Campaign Finance in State Legislative Elections. He states that "contestants in safe districts spend considerably less money than candidates running in competitive districts" (45).

The last set of factors involved in this study is called positional characteristics. The first factor discussed in this section is the role of the minority part leader. This is believed to be important because the minority party always wants to become the majority party. Thomas Little discusses this point in his article "Understanding Legislative Leadership Beyond the Chamber: The Members' Perspective."¹ The next factor in this section is the number of years since a party change. We believe this to be important because new parties in power will tend to work harder to keep it. Cindy Rosenthal agrees when she writes "Ultimately new legislative parties have a lot to do with money and the cost of legislative campaigns..." in the article "Where's the Party?" from the State Legislatures June, 1994 issue (32).

Methodology

As of August 3, 1998, 48 percent of the legislators polled by the authors (a total of 159 responses) responded. A comparison of the sample and the population in the appendix indicates very few differences between the population and the sample. In order to determine the degree to which state legislative leaders are involved in campaigns we surveyed 334 state legislators using the Dillman survey method. The first set of surveys was mailed on June 21, 1998. After nine days of compiling the data of returned surveys, a follow up postcard was sent out to the leaders who had not responded. A follow up survey was sent out on July 10th, just eleven days after the follow-up postcard. In addition to questioning legislative leaders about the extent of their campaign activities, we asked about the decision-making factors they used to distribute money, as well as any concerns they might have with their roles.

The survey data was supplemented with data on selected characteristics used to describe the respondent's position, the state's institution and the state to complete the data set. Sources for this information include the Handbook of State Legislative Leaders, The Center for American Women in Politics, Handbook of the states and State Legislative Elections: Voting Patterns and Demographics.

Dependent Variable

When first defining the dependent variable the authors combined the first six questions of the survey by assigning them a numeric value from one to five (1-5) for each question. The total point range spread from six to thirty (6-30), with six being low and thirty being high. The first seven questions asked:

How often the legislative leaders helped to recruit legislative candidates.

The amount of time they spent advising members in regards to campaign strategies.

How involved they were in raising money for the party caucuses.

How involved they were in raising money for the leadership caucus.

Their involvement in raising money for their own campaign

How often they made campaign appearances on behalf of candidates.

How much of a role they played in developing a campaign agenda for the party.

These activities reflect those discussed by Jewell and Whicker (1992), Rosenthal (1998), and Little (1993).

Independent Variables

The independent variables included in this study are: district size, key leaders, legislative competition, professionalism, the leader's party status, the percent of women in each chamber, the percent of individual seats that were competitive, and the total number of years since there has been a majority party change. The first of the eight variables is district size, which was formulated by taking the population of the state and dividing it by the number of seats in that state legislative chamber. The second is the variable entitled key leader, defined as the one member in each chamber that has the power to appoint committees and committee chairs. Legislative competition is defined as the difference between the percentage of Democrats and the percentage of Republicans in each chamber subtracted from 100. The fourth variable considered was professionalism, which basically combines the number of days attended in session (1995-1996), legislative salary (1996) and the number of staff per member relative to the United States Congress.

The variable of party status refers to whether the persons in question are in the majority party or the minority party of each particular state. This variable was coded as majority, if the person polled is a leader of the majority party, and minority, if the person polled is a leader of the minority party. The sixth variable used was the percentage of women in each chamber (1997). This was coded by dividing the number of women in each chamber by the total number of members per chamber. The last independent variable used deals with individual competition. The percentage of seats that was competitive² for every chamber in every state during the last election was counted and that number was entered.

Analysis

Our first concern is the degree to which legislative leaders engage in campaign related activities. The frequency with which leaders engage in such activities is presented in Table 1. As can be seen in the table, over ninety percent (91.9%) of the respondents engaged in developing a campaign strategy. This was the most commonly cited activity. The second highest cited activity was raising money for party caucus, 82.0%, followed by setting the campaign agenda at 76.4%. The survey revealed that almost a quarter of the respondents (72.7%) were frequently in-

volved in recruiting candidates, while 72.7% of the respondents indicated they considered campaign appearances part of their responsibilities, and 61.1% indicated they raised money for their own Political Action Committees.

TABLE 1

Source: Survey of the State Legislative Leaders, June/July, 1998

Percent of Leaders Engaged in Campaign Activities

Developing a Campaign Strategy	91.9%
Raising Money for Party Caucus	82.0%
Setting the Campaign Agenda	76.7%
Recruiting Candidates	73.7%
Campaign Appearances	72.7%
Raise Money for Leadership PAC	61.1%

The above table reveals some interesting facts, such as that more leaders feel they spend more time raising money for party caucuses than they do in setting the campaign agenda. Another interesting revelation is that the leaders don't feel pressure to raise money for their PAC, but they do feel pressure for raising money for the party caucus.

To look at the factors associated with engaging in these activities, the campaign activities scale was regressed on the nine institutional, political and position-related variables discussed above. The first factor discussed is aggregate partisan competition, identified elsewhere in this paper as legislative competition, because of its statistical significance.³ Another reason it was chosen first is because it is by far the strongest influence on legislative leaders' activities reported. That can be seen by looking at its beta result, which is .3481. Beta indicates the relative strength of the independent variable's effect on the dependent variable. In other words, legislative competition has the power to affect activity to a much greater degree than any of the other factors involved. The B statistic shows how much activity will increase if legislative competition goes up one percent. So in this case, activity will go up a tenth of a point for each percentage point legislative competition goes up. For example, a leader in a state with a 95% competition score will average four points higher on the campaign activity scale than will a leader in a state with a 55% competition score ($95\% - 55\% = 40\%$; $40 * .10 = 4.00$).

The next strongest influence discovered is the percentage of women in the chamber listed under institutional characteristics. Although not as strong as the legislative competition variable, the beta for this variable is a strong .1892. The absolute effect, as measured by b, is also similar to that of legislative competition ($b = .1059$). Another variable that shows significance is the district size, located in the same category as percentage of women. The beta for the district size variable is -.1457 and the B is a -.0008. This indicates that for every ten-percent increase in district size there is a .08 decrease in campaign activity. This may not seem important but when comparing the Delaware house, with an average district size of 17,000

people, to the California house, with a district size of 800,000 people, for example, one could see where it would matter.

Another significant variable is the key institutional leader category, better known as key leader, with a strong beta .1462. The beta once again shows how much relative strength the independent variable has to effect the dependent variable, and the B value shows that a person in a key leadership position averages almost two points (1.7042) higher on the campaign activity score than someone not in the key leadership position, controlling for the other factors.

Although legislative professionalism, Republican party leader, minority party leader, and years since party change were not revealed as significant, they are at least consistent with the authors' expectations. One can see that all have a positive beta as well as a positive B. However, if one looks at individual partisan competition, better known as individual competition among each seat, one can see that this also has an inverse relationship because of the negative signs next to the beta and B variables.

While we are primarily interested in which factors are associated with campaign activity, it is interesting to note how well the whole model predicts such activity. The model expresses twenty percent of the variables in leadership campaign activities. In other words, by knowing these nine variables we can predict about one fifth of the variations of the campaign activities. The model is statistically significant at .000.

Conclusion: Leading Where the Action Is

This research was undertaken with the assumption that as campaigns for the state legislature became more expensive and the seats more valued, state legislative leaders are becoming more involved in the campaign activities of their members. The results of our survey of 158 state legislative leaders supports this assumption. Over half of all state legislative leaders indicate they are frequently involved in recruiting candidates, developing campaign strategies, developing caucus campaign agendas, raising money for the party or raising money for their own leadership caucus.

However, regression analysis reveals that different leaders do not emphasize campaign activities at the same rate. Indeed, some leaders are significantly more likely than others to engage in such activities. Leaders in institutions with competitive legislative parties, a higher proportion of women members and smaller legislative districts are most likely to participate in campaign activities. Furthermore, the pressure for such action falls most squarely on the shoulders of the most powerful leaders rather than on those in honorary positions or secondary roles. Campaign activities are significantly more likely to become an integral part of leadership in those states where it is most needed (where the loss of a seat or two means the loss of power, and where candidates have trouble raising funds because they are female or hale from small districts), or when leaders are in the best position to raise money and influence policy.

When one looks at these results in light of other legislative trends, it would seem that such activities will continue to be important to leadership. Clearly, as legislative institutions are becoming more competitive and more partisan, these activities will increase in importance. Further, the proportion of women in the legislature is expected to continue its rise, making the need for campaign assistance more valuable than ever. In a similar manner, as term limits increase the number of open seats and the importance of key leaders, those leaders in the most powerful positions will be looked on more and more as the source for campaign assistance.

These results suggest that scholars, journalists and leaders alike may need to redefine the nature of legislative leadership to more accurately reflect the importance of campaign activities in it. Journalists who fail to make this adjustment may lose a story. Scholars who fail to make this adjustment may misunderstand leadership or give an inaccurate account. However, legislative leaders who fail to account for the growing importance of campaign activities as a part of their job may well find themselves relieved of their leadership responsibilities.

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Notes

¹*Legislative Studies Quarterly*, 1993

² Defined as 60% or less in any single member districts, 35% or less in any two or three member districts, 30% or less in any four member districts, 25% or less in any five member district, and 20% or less in any six member district.

³The significance of the effect of each independent variable is determined by a two tailed t-significance. Variables were deemed significant if the significance of t is .10 or less.

Factors Associated with Drop/Failure Rates and A/B Rates in Freshman Mathematics Classes at UTA in Spring '98

Chad Andrew Milligan

Mentor: Dr. D.L Hawkins, Department of Mathematics

Abstract

Our study is to look at the withdrawal/failure rates in the freshman math courses at UTA in the spring of 1998. The purpose of our study is to: 1. estimate drop/failure rates within designed responsibility and preparation strata, and 2. estimate the efficacy of the advising process for these students. Student responsibility is measured by UTA course load and hours worked weekly by the students, and other activities and preparation are measured by ACT/SAT scores. These factors were given on a voluntary questionnaire of twenty-four UTA Spring 1998 freshman math courses. Along with the questionnaire data are two other forms of data: 1. student attendance data, and 2. the withdrawal/failure data given to us by UTA Registrar. The purpose of the three forms of data is to define strata dealing with responsibility and preparation and determine if the rates change over these defined strata.

I. Introduction:

The object of this study is to look at factors that affect Drop/Fail and A/B Rates in freshman math courses at UTA. The Drop/Fail Rate is the percentage of students who either drop their math class or fail it, and the A/B Rate is the percentage of students who received either an A or B in their class. So the essence of this study is to look at factors that may not only improve the grades in these math courses but to look at factors that may prevent students from having to retake a math class. Various factors looked at are student absenteeism, SAT equivalency scores, age of the student, total hours and advising status and possible combinations of these factors.

II. Data Sources:

2.1 Census-Day Questionnaire Data

This study began with a voluntary survey issued to students of twenty-four (24) freshman math courses. These courses included: College Algebra(1302), Trigonometry(1303), Elementary Statistics(1308), Business Algebra(1315), Analytical Geometry(1325) and Calculus I(1426). The breakdown of students in the classes is shown below in Table 1.1.

Table 1.1

Breakdown of Target Classes, by Course.

COURSE	Frequency	Percent
1302	188	18.1
1303	137	13.2
1308	137	13.2
1315	93	8.9
1324	40	3.8
1325	205	19.7
1426	241	23.2

These students were given the option of participating in the study by completing a

voluntary survey on census day (2/14/98). Not all students in the target classes participated in the study, as shown in Figure 1.2. Figure 1.3 is a breakdown of the study participants over the target courses.

Figure 1.2
Participation Status of Students in Target Classes.

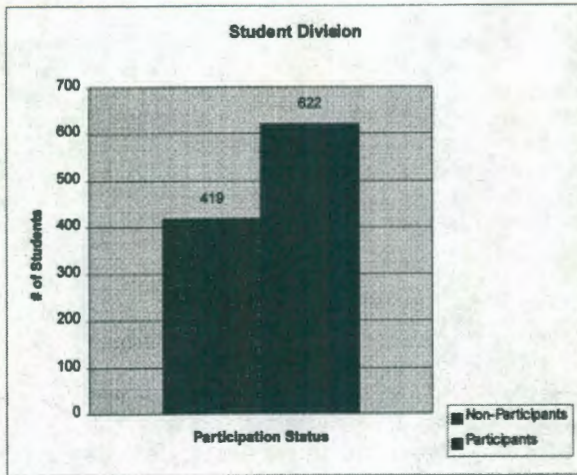


Figure 1.3
The breakdown of the study participants over the target courses.

COURSE	Frequency	Percent	Cumulative	
			Frequency	Percent
1302	108	17.4	108	17.4
1303	88	14.1	196	31.5
1308	103	16.6	299	48.1
1315	60	9.6	359	57.7
1324	25	4.0	384	61.7
1325	139	22.3	523	84.1
1426	99	15.9	622	100.0

2.2 Attendance Data

Another data source that we were compelled to consider was attendance data, because it seemed very likely that there would be a strong relationship between attendance and the study variables in a university course. Attendance in target classes was taken daily by passing out a copy of the census day roll. On Friday of each week this data was entered into a database where it could later be merged for analysis.

2.3 Registrar Data

At the end of the semester, registrar data was provided. The registrar data contained pertinent information for our study including: participant's grade, age, credit hours, ethnicity, SAT scores, ACT scores and other data that our research team would consider as possible factors in our study.

2.4 Merging of the Databases

After obtaining the data, it was necessary to merge them all into one database where analysis could be done. This was done by merging all three of them by the students' ID numbers. Throughout the study, lack of disclosure was very important due to the sensitivity of the data. After merging, all names were deleted from the file to protect the students.

III. Study Results

3.1 Variable Definitions

The primary study variables are:

Drop/Fail Rate: This is the percentage of students who either dropped or failed their math class.

A/B Rate: This is the percentage of students who received either an A or a B in their math class.

The factors we decided to look at are:

SATE: The SAT score (verbal + math), if available, or a conversion of the ACT total score to the SAT scale, if ACT was present. All scores were obtained from the registrar database.

Absenteeism: The percentage of classes that the student did NOT attend. Absenteeism was obtained from the attendance database.

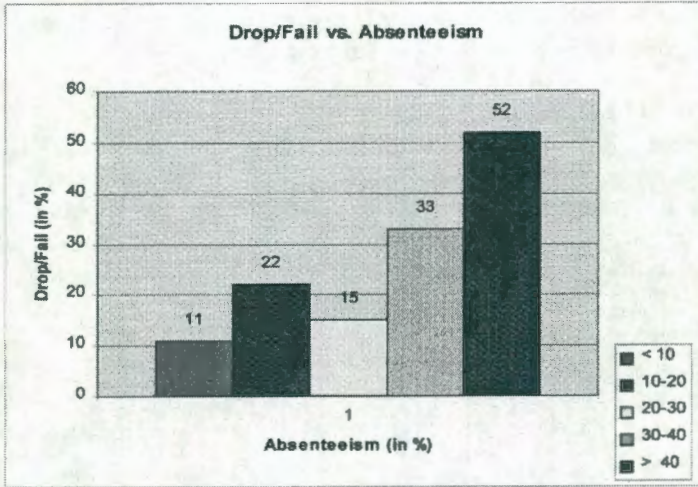
Total Hours: The weekly amount of time a student is working or doing schoolwork, defined as $\text{Total Hours} = 3 * (\text{number of credit hours student is taking}) + (\text{hours student is working})$. Credit hours were obtained from the registrar database and work hours were self-reported on the census-day questionnaire.

Advising Status: Was the student advised to take the math course they are in? Yes or No. Advising was self-reported on the census-day questionnaire.

Age: How old is the student? Age was obtained from the registrar database.

3.2 Results for Drop/Fail Rate

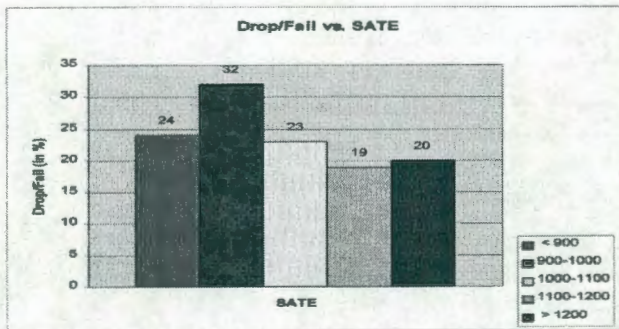
3.2.1 Drop/Fail vs. Absenteeism



Absenteeism	n	% of sample	SE(Drop/Fail)
<10%	165	27%	2%
10-20%	109	18%	4%
20-30%	83	14%	4%
30-40%	80	13%	5%
> 40%	71	28%	4%

Comments: As the graph indicates, as absenteeism increases, so does the drop/fail rate. The drop/fail rate jumps from 11% for students who miss less than 10%, all the way to 52%, for students missing over 40% of the classes.

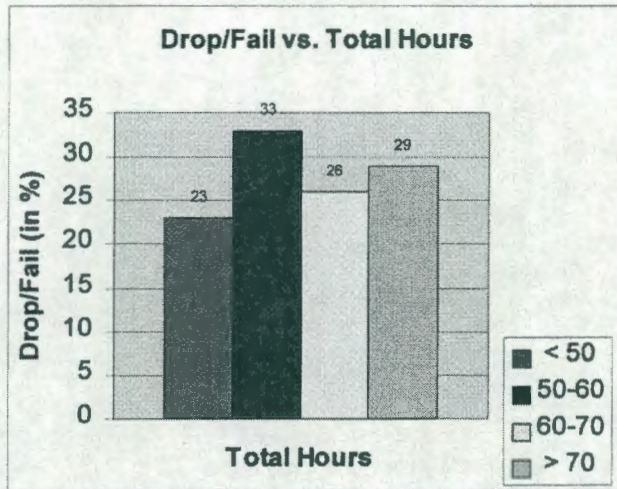
3.2.2 Drop/Fail vs. SATE



SATE	n	% of Sample	SE(Drop/Fail)
< 900	75	12%	5%
900-1000	102	17%	5%
1000-1100 77		12%	5%
1100-1200 75		12%	5%
>1200	35	6%	7%
Missing	244	41%	—

Comments: SATE is only very weakly associated with the drop/fail rate, with the higher SATE students showing a slightly lower drop/fail rate than the lower SATE students.

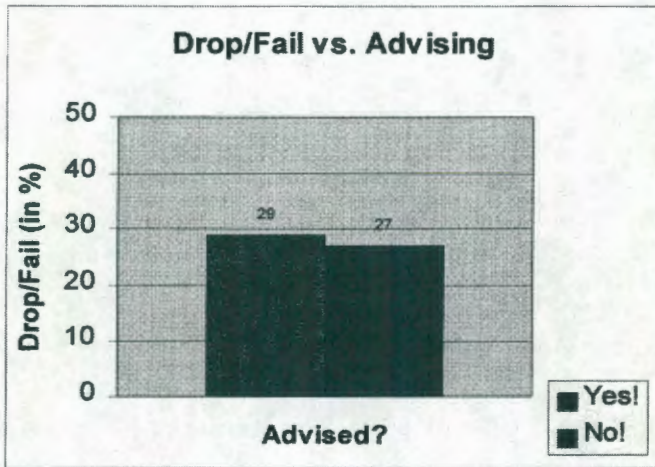
3.2.3 Drop/Fail vs. Total Hours



Total Hours	n	% of Sample	SE(Drop/Fail)
< 50	144	24%	4%
50-60	172	28%	4%
60-70	172	28%	3%
> 70	120	20%	4%

Comments: There is a slight tendency of drop/fail rates to increase as total hours increases .

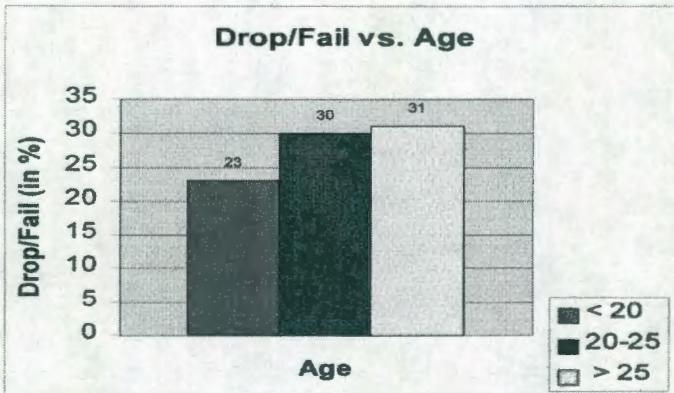
3.2.4 Drop/Fail vs. Advising



Advising Status	n	% of Sample	SE(Drop/Fail)
Advised	365	60%	2%
Not Advised	241	40%	3%

Comments: No apparent difference in drop/fail rate with respect to advising status.

3.2.5 Drop/Fail vs. Student Age

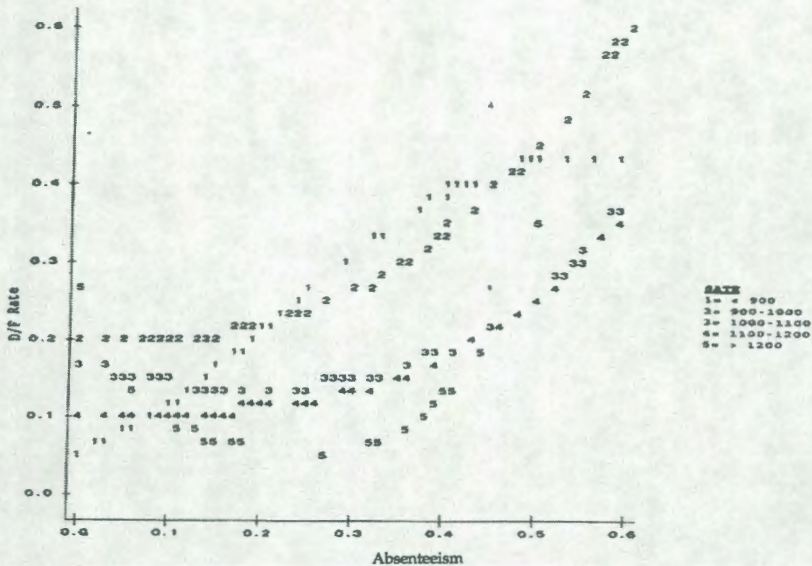


Age	n	% of Sample	SE(Drop/Fail)
< 20	210	35%	3%
20-25	231	38%	3%
> 25	167	27%	4%

Comments: Age seems to have an increasing effect on drop/fail, which would seem to contradict popular belief. The typical belief is that with age comes maturity and with maturity comes better grades.

3.2.6 Influence of SATE Score on the Relationship between D/F Rate and Absenteeism

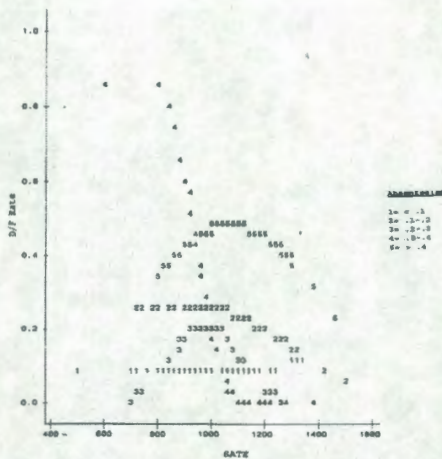
Having seen the strong relationship between the drop/fail rate and absenteeism, one wonders whether this relationship changes across SATE categories. As absenteeism rates increase, the students with the lower SATE scores see their drop/fail rates increase faster and to higher levels than students who have higher SATE scores. When absenteeism reaches .5, the students with an SATE < 1000 have a drop/fail rate of about .4-.5 while students with SATE > 1000 have a drop/fail of about .3-.35. So the "smarter" students are able to miss class more often and not drop/fail as often as other students.



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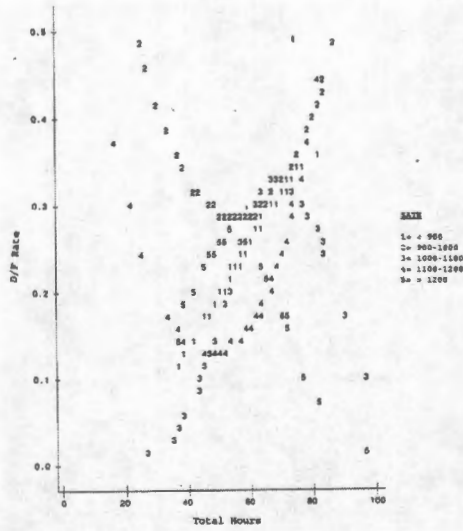
3.2.7 Influence of Absenteeism on the Relationship between Drop/Fail Rate and SATE Score

Here we look at how the drop/fail-SATE relationship changes depending on absenteeism category. The best attending students (1) see very little effect of SATE on drop/fail. However, students with absenteeism of .3-.4 have a drop/fail rate of about .7 for low SATE scores and continually see the drop/fail rate drop as SATE increases, leading us to believe that higher SATE scores mean lower drop/fail rates. The worst attending students (5) are in trouble no matter what their SATE scores are. They average about .4 drop/fail despite their SATE scores, implying that no matter how prepared one may be for college, high absenteeism will greatly increase one's chances of having to drop or receive an F.



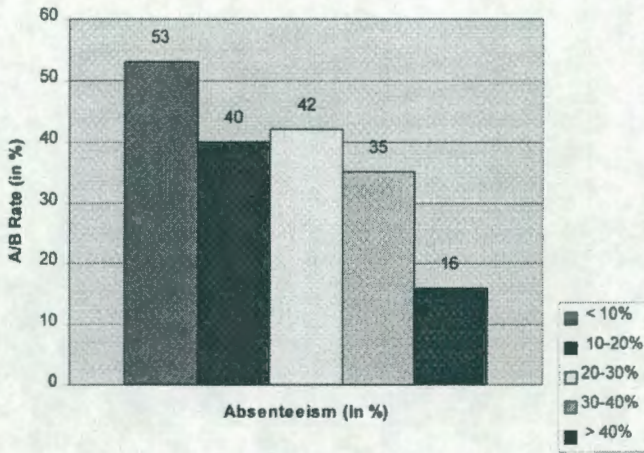
3.2.8 Influence of SATE Score on the Relationship Between Drop/Fail Rate and Total Hours

There are two basic forms of relationships. For SATE categories 1, 2 and 4 the drop/fail rate increases with increasing total hours, suggesting that lower SATE students are overcome by heavier workloads. For SATE categories 3 and 5 the drop/fail increases with total hours up to a point and then decreases. High SATE, low total hours and high drop/fail rate suggest laziness or irresponsibility in the students. High SATE, high total hours and low drop/fail rate suggest initiative and good responsibility.



3.3 Results for A/B Rate

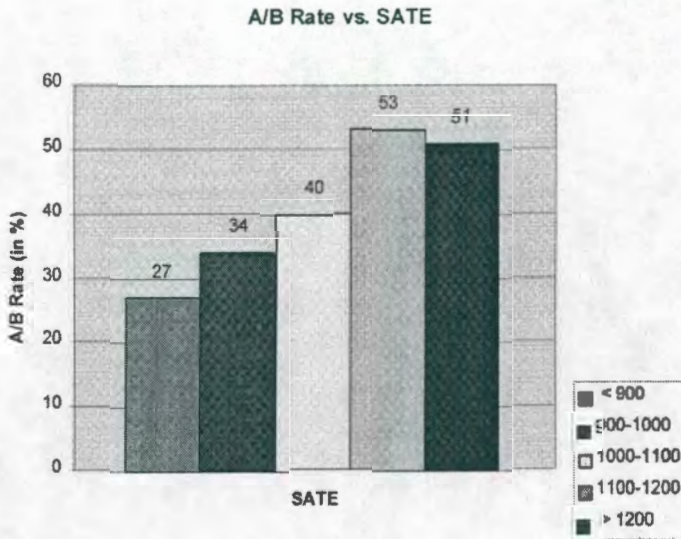
3.3.1 A/B Rate vs. Absenteeism



Absenteeism	n	% of Sample	SE(A/B)
< 10%	165	27%	4%
10-20%	109	17%	5%
20-30%	83	14%	5%
30-40%	80	13%	5%
> 40%	171	29%	3%

Comments: Again, absenteeism seems to be a significant factor. As absenteeism increases the A/B rate decreases suggesting that students who miss a lot of class will not be as successful as those who attend regularly.

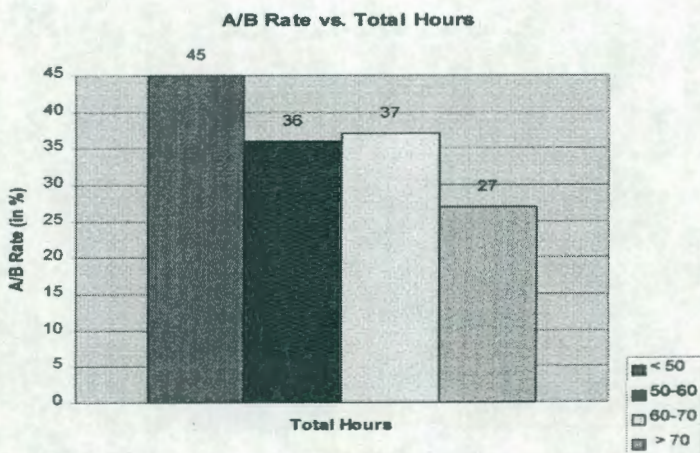
3.3.2 A/B Rate vs. SATE



SAT Score	n	% of Sample	SE(A/B)
< 900	75	12%	5%
900-1000	102	17%	5%
\1000-1100	77	13%	6%
1100-1200	75	13%	6%
> 1200	35	6%	8%
Missing	244	41%	—

Comments: A/B Rates are strongly affected by SATE scores. The highest scoring categories of SATE have twice the chance of a grade of A or B than students who scored less than 900 on SATE.

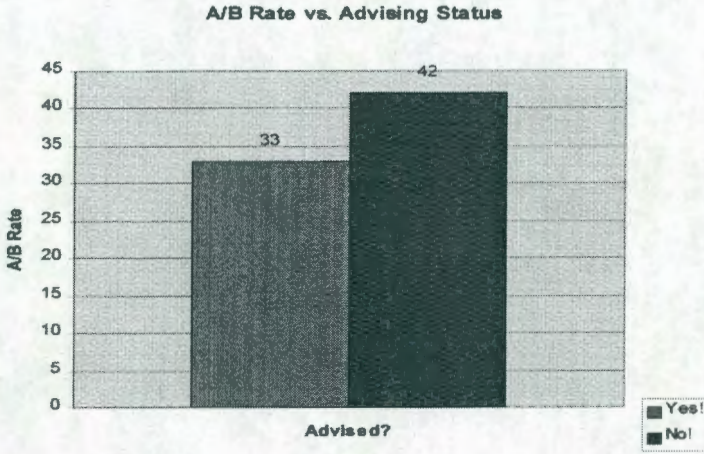
3.3.3 A/B Rate vs. Total Hours



Total Hours	n	% of Sample	SE(A/B)
< 50	144	24%	4%
50-60	172	28%	4%
60-70	172	28%	4%
> 70	120	20%	4%

Comments: Although total hours has very little effect on the drop/fail rate, it has a large impact on the A/B rate. Students who have less than 50 total hours are almost 20% more likely to receive an A or a B in their math courses than students with over seventy (70) total hours.

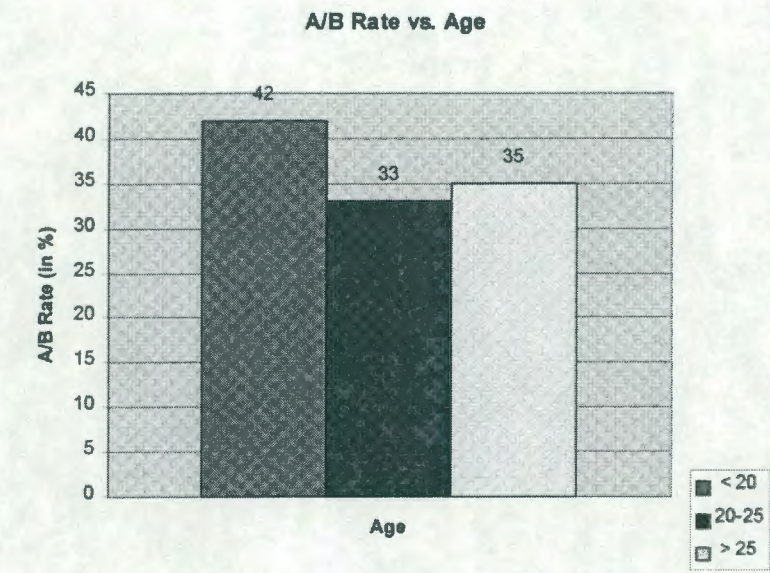
3.3.4 A/B Rate vs. Advising Status



Advising Status	n	% of Sample	SE(A/B)
Advised	365	60%	2%
Not Advised	241	40%	3%

Comments: An interesting result here is that students who were advised had a lower A/B rate. We later discovered that this was due to the fact that students who were advised had a SATE score of 50 lower on average than those who were not advised.

3.3.5 A/B Rate vs. Age

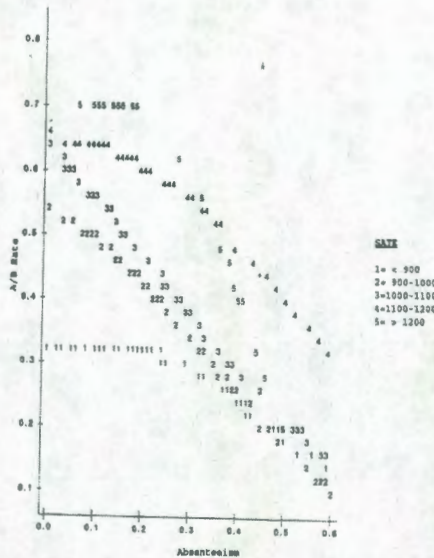


Age	n	% of Sample	SE(A/B)
< 20	210	35%	3%
20-25	231	38%	3%
> 25	167	27%	4%

Comments: As seen in the graph above, age has a small impact on A/B rate. The younger students (< 20) seem to have a higher A/B rate than the older students. The difference is about 7 %.

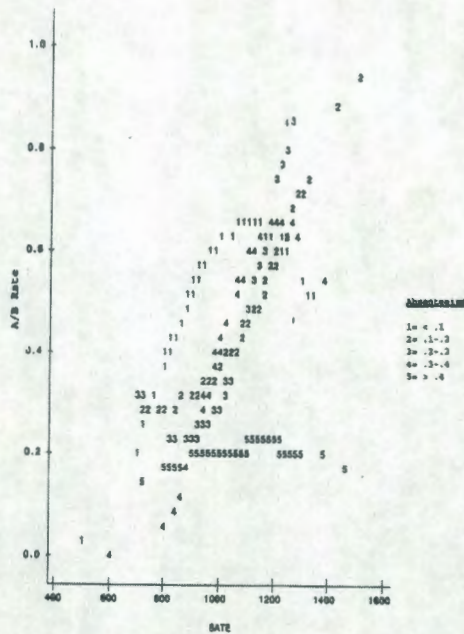
3.3.6. Influence of SATE Score on the Relationship between A/B Rate and Absenteeism

This graph shows the effect of SATE absenteeism on the A/B-absenteeism rate. As shown by the graph, all the students have a decrease in the A/B rate as absenteeism increases. Of interest is the rate of the decrease of the A/B rate. The lowest SATE category (1) has a very low A/B rate and decreases just slightly as absenteeism increases, implying that they are suffering more from the low SATE scores than from absenteeism. The next two categories have an initial A/B rate of about .6 but they decrease almost linearly, with absenteeism bottoming out at about .1 success rate when absenteeism reaches .6 or 60%. The upper two SATE categories have an initial A/B rate of about .65. Their A/B rate also decreases but at a much slower pace than the other categories, bottoming out at about .3 or 30%.



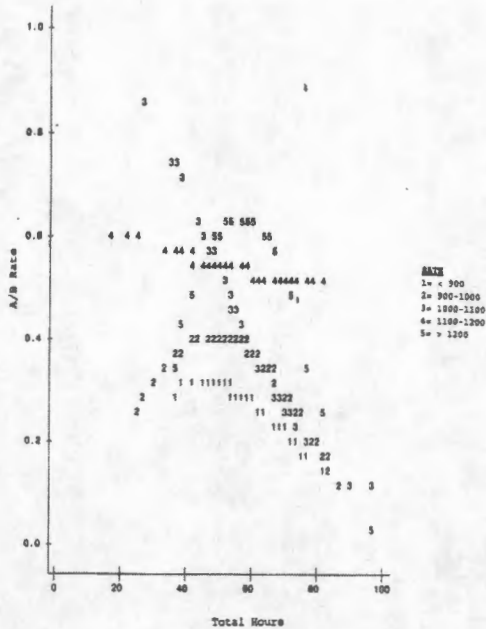
3.3.7 Influence of Absenteeism on the Relationship Between A/B Rate and SATE Score

In this graph, we look at the effect of absenteeism A/B-SATE relationship. For most of the absenteeism categories, the A/B rate increases with the increase of SATE. For the abysmal absenteeism categories, the A/B rate doesn't go any higher than .2 for any SATE. Therefore, if a student misses more than forty (40) classes, then only two (2) out of every ten (10) students in that category will receive an A or a B. For the better absenteeism categories, the A/B rate goes as high as .6 or 6 out of every ten (10) students will receive an A or a B. Again, we see how pivotal absenteeism is and the positive outcome of minimizing it.



3.3.8 Influence of SATE Score on Relationship Between A/B Rate and Total Hours

In this graph, we look at the effect of SATE on the A/B-total hours relationship. All five (5) categories of SATE suffer lower A/B rate as total hours increase, with SATE category four (4) being the least affected by total hours. One interesting point is the effect of total hours on the A/B rate in SATE category five (5). Earlier we saw that as total hours increased, the drop/fail rate in SATE category five (5) decreased, implying that SATE category received an A, B, C or D more often when total hours were high. In this graph, we can conclude that while SATE category five (5) received a non-drop/fail grade more often, these students weren't as likely to receive an A or a B. This leads us to believe that SATE category five (5) finds a way to survive when total hours increases but are not as successful.



IV. Conclusions

Throughout this study our main thrust was to look at the factors that effect the drop/fail rate and the factors that effect the A/B rate. The drop/fail rate was affected highly by absenteeism and the factors of age, SATE and total hours had minor effects. This led us to conclude that the most important factor in curbing the drop/fail rate is regular class attendance. While a student can improve his chances by having a high SATE or by having low total hours, or by being under twenty-five (25) years of age, he really takes his drop/fail status into his own hands by having a low absenteeism rate. The A/B rate was highly effected by absenteeism, SATE, advising status and total hours, while age had a minor effect. Absenteeism was far and away the most important factor looked at, confirming many people's belief that attending class is the best route to success.

Understanding Airport Customer Segments Based On Rating Of Airport Services

Silverio V. Pacleb

Mentor: Dr. Mark Peterson, Department of Marketing

Abstract

Segmentation literature maintains that market segmentation is the primary strategic element in a company's marketing plan. This strategic element can be most meaningfully addressed by identifying the specific dimensions of a company's offerings. The purpose of this study is to better understand airline passengers rating of the following five airport services: 1) accessing the airport, 2) parking, 3) renting cars, 4) eating and 5) shopping. As part of a large-scale study at Dallas/ Fort Worth International Airport, a sample of 1501 airline passengers completed questionnaires in which they were asked to rate five major airport services in terms of satisfaction levels. A priori segmentation analysis was used to understand segments based on 1) usage (passenger originating/disembarking at DFW International Airport or passengers transitioning DFW International Airport), 2) purpose of trip (business or leisure) and 3) airline preference (American Airlines or other airlines). Post hoc segmentation analysis was accomplished with clustering analysis to understand these segments based on rating of the five airport systems at DFW International Airport.

INTRODUCTION

Segmentation literature maintains that market segmentation is the primary strategic element in a company's marketing plan. This strategic element can be most meaningfully addressed by identifying the specific dimensions of a company offering (Smith, 95). It is for these reasons that an area of concern for airport managers is the perception of airport services by airline passengers. Several years ago the general impression about airports were that they were under the management domain of the airlines. Currently, airport commissions formed by city board members manage airports (Sharp, 91). Their managerial concerns are focused on operating an airport in the manner of a profit center. Although the airport has three principal users—the airlines, the airport operators, and the passengers—management focus is on the passengers. Because passengers are the principle source of revenue, it is believed that their needs should be given equal, if not higher, priority than other users needs in the planning and design of airports. (Fodness, 98).

The problem to be studied in this paper is customer perception of DFW International Airport (DFW) airport services. It is recognized that air travelers travel through DFW's airport and airline systems each day, which leaves some questions about whether they will return to DFW. The limited number of studies conducted on airport customers magnifies the problem of not understanding airport customers' perceptions. The purpose of this research project is to understand the different market segments based on air passenger evaluation of airport services. The evaluations focus on the following five airport services: 1) accessing the airport, 2) parking, 3) rental cars, 4) restaurants, and 5) retail stores. The study focuses on the satisfaction levels of passengers in their use of some or all the five airport services.

The major research question asked here is: Are there any significant differences in the satisfaction ratings of airport services among groups of air passengers who are either on a connecting flight or flight originating out of DFW, traveling for business or leisure, or traveling on particular airlines? The major research hypothesis here is the belief that those whose flight originated in DFW, who are on a leisure trip, and who fly American Airlines will give higher ratings for airport services. The hypothesis was developed using a management discipline theory of the resource-based view of a firm. The theory explains that human assets can be a source of sustainable advantage because tacit knowledge and social complexities are difficult to imitate. (Coff, 97) By applying resource theory to the domain of airport services, we propose that air travelers are concerned with personal resources available to them. We proposed that the resources of time and money influence air traveler decisions and satisfaction levels when evaluating services. It is believed that leisure travelers are not as concerned with time (as in meeting a deadline), but are more concerned with preserving their monetary resources. Therefore, they are considered price sensitive. Conversely, business travelers are more concerned with time because of their need for meeting deadlines. As a consequence, they are considered less price sensitive. We also believe that regional or geographical differences among air travelers influence individual evaluation of airports based on their differences in consumption behaviors (Schiffman & Kamuk, 94). As an example, an international airport may impress a traveler with services provided for a diverse population when compared to a midwestern city airport where the traveler may have originated.

The significance of the problem is the possible revenue loss for DFW airport if air passenger perspectives of airport services are not considered in the decision process for airport expansion plans. If amenities that customers consider important are not made available, it is conceivable they would not frequent an establishment for very long. Therefore, the problem of ascertaining the airport customers' perception of airport services is the focus of this study (Fodness, 98).

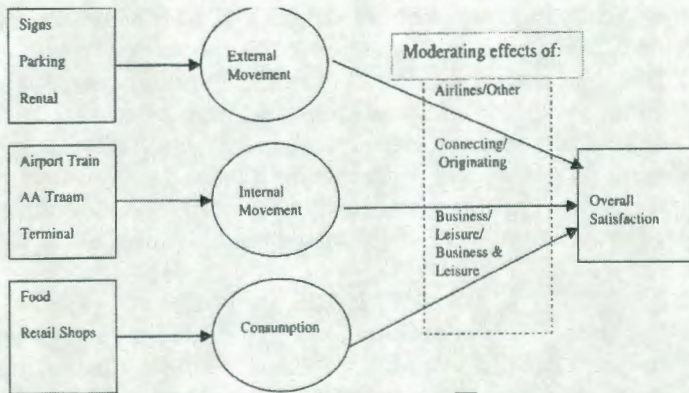
The Airline Deregulation Act of 1978 had profound effect on the air transportation industry. The Deregulation Act forced airlines to become efficient in the face of competition. Two of the most visible effects of the act are the present structure of the air route system and the growth of the hub and spoke system. The air route system was developed to provide market opportunities for local travel traffic. The growth in the number of hub and spoke airports allowed the airlines to maximize their resources and provide benefits to air travelers in reaching a variety of destinations. These developments affected airports in ways not experienced prior to 1978. Airports shouldered the responsibility to efficiently manage the movement of thousands of air travelers and the economic growth of the communities involved (Sharp, 91).

Unfortunately, current academic literature on the subject of airport users segmentation is scarce. However, it can be safely assumed that within the air transportation industry individual airport commissions have conducted studies about

their market and kept the results confidential. It was once the concern of airport commissions to satisfy the airlines in order to maintain facilities that transferred passengers efficiently. However, with impending competition from Love Field in Dallas and possibly other airports such as Alliance in Ft. Worth, the view of airport operation as a business is now needed (Sharp, 91).

Figure I illustrates a proposed model of overall satisfaction. Factors of signs, parking, and rental cars define the construct of External Movement. Other factors define the constructs of Internal Movement and Consumption. The moderating effects of 1) trip originating point, 2) trip purpose, and 3) airline used may influence overall satisfaction. This model considers the airport systems currently in use at DFW and becomes the base for understanding what factors may describe possible target markets. The three constructs of External Movement, Internal Movement and Consumption were developed from the data to study overall satisfaction. The scheme of the model is to recognize that individuals would travel through portions, if not all, of the airport systems, therefore, experiencing DFW airport.

Figure I: Proposed Model of Overall Satisfaction



METHODOLOGY

The research design is a cross-sectional, exploratory survey that attempts to make statements about the population of air travelers. The location of the study was the Dallas/Fort Worth International Airport (DFW). A convenience sampling of air passengers was taken inside the air terminal at airline departure gate waiting areas.

DATA COLLECTION

The research focused on respondents from the population of air travelers that travel through DFW International. Approximately 1600 questionnaires were distributed among the four air terminals at DFW. A total of 1501 questionnaires were completed and returned. The sample was stratified by day of the week and

time of day in order to assume a representative sampling of business and pleasure travelers and travelers combining the two purposes. Passengers were sampled on as many competitive flights as possible. In total, 27.5 percent (370) of the respondents traveled with an air carrier which competed with the major carrier originating and terminating at DFW. With specific air terminal, dates, times and airlines predetermined, interviewers were assigned to the gate areas. Questionnaires were distributed to passengers near each gate prior to their departure. The data were collected from departing passengers in boarding lounges near departure gates in all four terminals during an eleven-day period from May 23 through June 3, 1997 (Fodness, 98).

QUESTIONNAIRE

The instrument used for data collection was a multi-item questionnaire designed to measure customer satisfaction with various unrelated components of DFW airport. The questionnaire addressed major airport systems that involve direct customer contact at DFW airport. The questionnaire was comprised of two sections. Section I sought information which pertained to the respondent's current flight status, specifically inquiring about frequency of air travel, primary purposes of trip, and travel routing. Section II questioned the respondent regarding the systems at DFW: 1) airport access/egress, 2) parking, 3) rental cars, 4) terminals, 5) restaurants and snack bars, and 6) retail shops. Several statements are associated with each system and respondents were asked to rate each statement from 1 to 5, with 1 representing "terrible" and 5 representing "excellent." One overall rating question was asked as a criterion that directly requested the respondent's opinion of DFW airport. The questionnaire survey instrument is shown in the Appendix A.

ANALYSIS

Following collection and preliminary analysis, the survey data were used in correlation analysis. The analysis was to determine the degree of change in the overall satisfaction variable (q19.1) with the other variables. The belief was that there is a positive relationship between those variables. To verify the *a priori* segmentation, a T-Test was conducted to determine if the means of the variables were greater than or equal to 4.0. An ANOVA test was conducted to determine whether there were any differences between the *a priori* segments and variables of services. To determine *post hoc* segmentation, cluster analysis was conducted to identify subgroups within the three groups initially identified. Factor analysis was conducted to reduce the number of factors by identifying variables in the data. Factor analysis scores for the factors of retailing, terminal, food, and price were used in clustering analysis.

Prior to discriminant analysis, sample adequacy was assessed. The sample including 403 was deemed best, because all of these cases had evaluated three important constructs (1) terminal, 2) retailing, and 3) food). Because of overuse of the value of "4" by respondents when replying to the overall satisfaction question (q19.1),

those with "4" response to the question were dropped from subsequent modeling. After filtering out cases with "4"s from model no.6, 141 cases remained for analysis. The models and results of recoding are shown in the Appendix B. Discriminant and logistic regression analysis were used to determine a derived importance of the airport services factors found in factor analysis.

RESULTS

Following collection and data cleaning the total sample size was 1346 respondents. The method for identifying and segmenting airline passenger markets was *a priori* segmentation analysis that was based on 1) usage (passengers originating/disembarking at DFW, 2) purpose of trip (business or leisure), and 3) airline preference (American Airline or other airlines). The results of the analysis revealed the 57 percent (571) of the respondents were passengers transitioning DFW on connecting flights, while 46.7 percent (601) of the respondents were on primarily pleasure trips. Seventy-two (72) percent (976) were American Airline passengers.

Descriptive analysis revealed that for most of the variables the mean varied little from 4.0. Parking fees, restaurant prices, and retail shops prices were notable with means centered on 3.5. This observation led to the following analysis. T-Test and ANOVA analysis was conducted on all the variables, which revealed no significant differences between the grouping variables of purpose of trip, point of origination, and airline preference. Results from the frequency procedure of the data revealed heavy use of the "4," (or "good") on the evaluation scale throughout all sections of the questionnaire by most of the respondents. The descriptive analysis results are shown in the Appendix B. Correlation analysis between overall satisfaction (q19.1) and other variables revealed that rental car variables did not correlate. The results also indicated a modest level of relationship among the other four systems. The correlation analysis result is shown in the Appendix B.

Clustering analysis did not identify any meaningful subgroups in the three *a priori* segments of connecting, purpose, or airline preference groups. Four cases were identified as a possible subgroup. However, the size of the group would provide little meaningful interpretation. Cluster analysis also revealed that the *a priori* segments had no significant differences among them indicating that the segments can be thought of as one group. Factor analysis reduced the number of factors from 6 systems to 4. These 4 factors are retail, terminal, food, and prices. Discriminant analysis further revealed that retail and terminal had a significant influence on satisfaction. Logistic regression modeled the classification of respondents into two groups: those who are dissatisfied and those who are very satisfied with the services. The model correctly classified predictive accuracy: 88.97 percent accuracy of respondents being dissatisfied.

DISCUSSION

The results of correlation analysis indicated the rental car variables do not correlate with the overall satisfaction variable. A possible explanation could be that

the respondents hold the view that rental car companies are not a part of the airport system, and that the rental companies are a separate entity and operate alone. Figure 2 summarizes the outcome of the logistic and discriminant analysis on the airport systems. Retailing Experience and Terminal Experience are the constructs that are most important to the respondents' satisfaction.

Figure 2. Model of Customer Satisfaction.

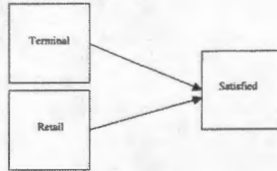


Figure 2 summarizes the outcome of the logistic and discriminant analysis on the airport systems. Retailing Experience and Terminal Experience are the constructs that are most important to the respondents' satisfaction.

Figure 3. Derived importance with Variables

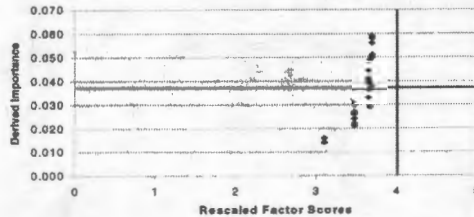


Figure 3 summarizes the data of discriminant and factor analysis with the factors of the retail, terminal, food, and price. The variables located in the top left corner are variables that require emphasis to improve satisfaction or to be moved into the top right corner of being very satisfied. Retail and terminal variables are most important in influencing satisfaction. Food and price have no significant influence in the overall satisfaction level.

Figure 4 Derived importance with averaged percentage

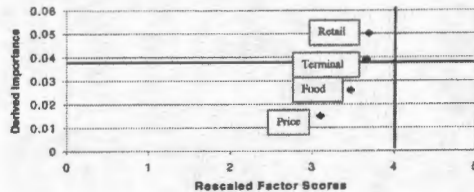


Figure 4 displays the average percentage of each factor (retail, terminal, food, price) in an uncluttered format. The computation for derived importance is shown in the appendix B-4.

Figure 5 Retail Experience—Probabilities toward satisfaction

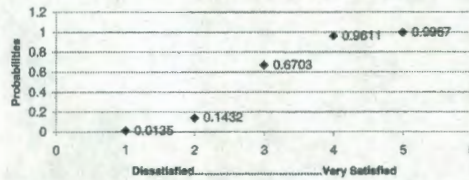


Figure 5 summarizes the data of logistic regression, where at each point the respondent displays the probability of being very satisfied. At point 1 of the dissatisfied/very satisfied scale, the respondent has the probability of 0.01 percent of being very satisfied. The computation for probabilities is shown in the Appendix B-5.

CONCLUSION

The research question that asks: "Are there any significant differences among the groups of air passengers in their satisfaction rating of airport services?", can be answered by saying, "These data do not support any differences." Cluster analysis revealed that the groups had no significant differences among them and could be classified into one group. Therefore, the best that can be said is that there is no major influence by the *a priori* segments on satisfaction ratings. The research hypothesis that states "The belief that higher ratings on airport services will be given by those who originated from DFW, who are on a leisure trip, and who fly American Airlines," cannot be answered. The classification of the *a priori* segments into one group prevents an answer to this hypothesis. However, a 3-way test or 2x3x2 factorial ANOVA was conducted to determine the possibilities. There were statistical differences, but with a large sample it produced small effects that could not be explained meaningfully. A major find was that Retailing experience and Terminal experience have the most influence on overall satisfaction. Discriminant and logistic regression analysis determined this find. If improvements toward customer satisfaction are considered, retailing and terminal changes are worth further investigation.

RECOMMENDATION

To determine demographic characteristics of the survey respondents, match the zip code data with PRIZM data to define the participants in this sample data. Questionnaire enhancements can be made by using a 1) 10-point scale and using anchors for end points, 2) explicitly evaluating bus service for shuttle parking and rental car facilities, 3) and including characteristic information such as gender, age, and education.

ACKNOWLEDGMENT

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Turning Tides: Analysis of Pre-Modern Symbolic Objects

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Abstract

Findings of purported symbolic objects from Lower and Middle Paleolithic sites are surveyed and critically reviewed. Given that symbolism flourished in the Upper Paleolithic in the forms of art, bodily adornment, and mortuary complexes, this research focuses on the symbolic capabilities of earlier hominids. Symbolic objects are generally defined as artifacts that refer arbitrarily to anything beyond themselves. These types of objects may represent either ideals or material connections of significance within a given population. A data collection strategy encompassing association and provenance information in the archaeological record, guided by intensive review covering literature from both primary and secondary data resources, serves as an instrument. Using our criteria, purported symbolic objects are analyzed and either rejected or accepted as pre-Upper Paleolithic symbols. Results of this project have implications for debates regarding the cognitive capacities of pre-modern humans.

Only a century ago some researchers and scientists believed that the age of humankind was no more than 10,000 years. Since that time new evidence has come to light, demonstrating that humans are much older than had previously been expected. This debate and eventual breakdown of the age fallacy are akin to the debate that currently ensues regarding the capacity of archaic humans to produce expressions of symbolism. Some researchers in the field argue that adequate evidence has not been presented to infer that humans could have expressed symbolic capacity before the Upper Paleolithic (Chase and Dibble 1987, Davidson 1992). However, the position of this research is summed up succinctly by Duff et al. (1992:225) in the following quote:

"Symbolic behavior clearly had adaptive significance. It increased the inclusive fitness of those groups who engaged in it over the evolutionary long-term, but it probably developed in contexts distinct from those in which it is manifest today. This means that we will only be able to detect it archaeologically long after it had become a significant part of the human repertoire."

In other words, it would be unreasonable to assume that the first occurrence of human symbolism would be in the abundance present in the Upper Paleolithic archaeological record. This is exemplified by Lower Paleolithic finds, such as ochre pieces that were intentionally heated to intensify the color at Terra Amata, France (Edwards and Clinnick 1980). The alternative hypothesis to this explanation seems more plausible, stating that a gradual acquisition of symbolism over time throughout the Stone Age led to the array of symbolic artifacts present in the Upper Paleolithic record (Klein 1996, Bednarik 1992, Bahn 1996).

One goal of this research is to do what few researchers have yet accomplished. Defining symbolism and symbolic objects and establishing more standardized criteria for determining symbolism for pre-Upper Paleolithic hominids has

been difficult due to the paucity of non-utilitarian artifacts when compared to functional artifacts, such as stone tools (Duff et al. 1992). Other problems exist to bias the available data, and will be examined more closely in this work. In addition, it is necessary to note that, of the three categories of evidence for symbolism found in the Lower and Middle Paleolithic, this research will focus on one to investigate whether archaic humans actually displayed symbolic behavior. Lithic assemblages, burial and ritual assemblages, and art all can exemplify symbolic expression (Duff et al. 1992). However, emphasis will be placed on objects supposed to exemplify mobilier and parietal art, as well as decorative items, in part because these forms have been largely misinterpreted as insignificant by some researchers.

A distinction must be made between the concepts of sign and symbol. Signs are primarily iconic representations of concepts. Iconicity is defined here as a depiction of the idea represented by a symbolic object, such as an ice age cave painting of an ibex or bison. Symbols do not necessarily have any direct or obvious connection to referents (Duff et al. 1992). Thus, they may or may not be representational, and an iconic sign is not necessarily an abstract symbol. Bednarik (1992) also distinguishes between symbolism and iconicity, or direct representation. Iconicity seems to obscure the perceptibility to researchers of symbolic content in artifacts according to Bednarik and will briefly be discussed later. Therefore, it is reasonable to assume that symbolism and the more iconic aspects of signs may be mutually exclusive in pre-Upper Paleolithic hominids. Symbolism may be defined as including, not only artifacts that refer to something outside the concept of self, but also objects that refer to the self for the purposes of communication to other humans. Researchers such as Mellars (1991) and Bednarik (1995) recognize this communicative function of symbolism, and it is employed here to include items of personal adornment as mobilier art. *Symbolic objects* are thus defined as artifacts of human enhancement (or manufacture) which refer to anything outside the individual or relate the individual to others.

Problems that arise in determining a set of criteria adequate to judge the symbolic content of pre-Upper Paleolithic objects relate to both the nature of the record and the theoretical biases of the researchers themselves. The archaeological record of symbolic objects for periods pre-dating the Upper Paleolithic is fragmentary (Duff et al. 1992), but this is to be expected for two reasons. First, nothing perishable can permanently resist the decomposing effects of time. It is reasonable to suggest that perishable symbolic objects were employed in the prehistoric past as they are in the ethnographic present. However, almost no material record remains of these items, nor of artifacts created on many media other than bone, teeth, ochre, or stone. An alternative hypothesis proposed by Duff et al. (1992) also suggests that the record will become more fragmentary with the increasing age of the material. Thus researchers should expect to find fewer artifacts of Middle Paleolithic age than those of Upper Paleolithic age, and even fewer yet from the Lower Paleolithic. Moreover, the distortion of taphonomic processes must be taken into account when examining hominid art (Bahn 1996). Many artifacts that seem to

correspond well with the marks of non-human predation (Blumenschine 1986, Chase and Dibble 1992), such as pierced or grooved objects, may have been modified by humans and later abraded or otherwise distorted both during and after deposition (Bahn 1996).

The researchers of pre-modern hominid symbolism are far from reaching consensus. This problem relates both to the type of explanation sought by researchers and the type of error they attempt to minimize (Chase and Dibble 1992). The principle of Ockham's Razor is a scientific standard, expressing the rule of thumb that the simplest explanation of the data is generally the most plausible. Some researchers seek this type of definition, resulting in oversimplification of the behavior of a complex genus such as *Homo*. Chase and Dibble (1987), for example, seek simple explanations that do not require the inference of deliberate symbolism for purported symbolic objects due to the stark contrast between industries of the Middle and Upper Paleolithic, or in Africa the Middle and Late Stone Ages, exemplified by sites such as Klasies River Mouth, South Africa (Singer & Wymer 1982).

Other researchers may enrich their hypotheses, but they will run the risk of assuming mechanisms of change that may not exist. Researchers who assert that language is a prerequisite for symbolic expression fall into this category. Davidson and Noble exemplify this, in that they believe that symbolic expression in archaic hominids that pre-date the Upper Paleolithic would concede a direct association between humans and lower primates, and thus require evidence of language as evidence of humanity (Bednarik 1992, Chase and Dibble 1987). For example, the finding of ochre in Nahr Ibrahim, Lebanon, associated with the burial of a fallow deer did not imply symbolism to Chase and Dibble (1987) because the context did not suggest any symbolic or ritual behavior. Davidson (Bednarik 1992:54) would agree with this conclusion for a different reason, stating that "*non-depictive marks on objects earlier than the Upper Paleolithic will not be found in repeated patterns, restricted in in time and distribution, from which we might infer a convention or code through which meaning could be recognised.*"

The null hypothesis for this research states that evidence of symbolic objects in the archaeological record before the Upper Paleolithic is insufficient to warrant the inference of capacity for symbolic behavior. Type 1 errors are those errors which lead to the acceptance of a hypothesis that is, in fact, false. Researchers who attempt to minimize type 1 errors risk committing type 2 errors, which result in the rejection of a true hypothesis (Chase and Dibble 1992). In this case, researchers who minimize errors that result in the rejection of the above null hypothesis may actually bias themselves against the existence of symbolism prior to the Upper Paleolithic. Conversely, those who minimize errors resulting in embrace of the above null hypothesis may bias their research toward pre-Upper Paleolithic symbolism.

The question of symbolism prior to the Upper Paleolithic has been widely researched, yet archaeologists still cannot reach a consensus regarding the proper criteria by which to infer symbolic behavior. Thus, the debate surrounding the growing body of claimed pre-Upper Paleolithic symbolic objects centers upon

whether enough evidence of symbolic behavior has been found in the record to justify any inference of flexibility of symbolic behavior among pre-modern humans comparable to that of modern people. Since a divided field makes a widely accepted theory of pre-modern symbolism impossible, it is necessary to review current theories that focus on symbolism in the Lower and Middle Paleolithic. It is important to note that some sources are more central to this topic than others, and I will briefly review those perspectives most germane to this debate.

Paul Mellars (1991) addresses the challenges inherent in answering the question of an agreed-upon criteria set. A distinction must be made between what archaic hominids were capable of and the behaviors that they actually engaged in, but this is not to assume that the absence of symbolic objects before the Upper Paleolithic was due solely to a lack of capacity. A lack of technology is no slight upon the capacities of early hominids. Mellars states that social context plays an extremely important role in the cultural adaptations of humans. Although many differences between anatomically archaic and modern peoples are noted, the same criteria that apply to the Upper Paleolithic for symbolic behavior are applied across the vast span of time previous to the Upper Paleolithic. He also infers that the Neandertal populations he investigated in Arcy-sur-Cure, France, seemed to exhibit behaviors similar to those of anatomically modern humans. In Mellars's article, clear symbolic behavior seems to be evidenced best by symmetric, standardized forms that Upper Paleolithic humans may have used as a mental template for the production of tools, although isolated excavations of probable pre-Upper Paleolithic symbols do occur. In agreement with Marshack, Mellars suggests that some symbolic behavior was evident before the Upper Paleolithic. The finding is based mainly on evidence of intentional burial and ritual during the Middle Paleolithic.

Alexander Marshack (1991) makes a striking comparison between the development of a child and that of a rapidly evolving species like *Homo sapiens*. The normal development of intellect progresses from simple to increasingly complex, a progression also seen in human evolution. He goes on to state that categories of accepted symbolic objects, such as tools, burial assemblages and art may very well reflect a "time-factored" thought process that developed in an undefined sequence. This means that people became able to place objects in space and events in time and serialize them, which provided adequate referents to require the creation and development of a symbolic communication system. By the Middle Paleolithic, a variety of tool forms and evidence of social structure are apparent. Marshack also infers the existence of symbolic behavior from objects associated with Middle and even Lower Paleolithic cultures. However, it is important to note that terms used by those in the field to categorize styles or define regional cultures may be arbitrary, as in the example of Bordes' typology of Mousterian lithic assemblages. Thus, he suggests that the "time-factoring" of many pre-Upper Paleolithic objects provides necessary information regarding the intentionality of symbolic meaning (1997). The skills necessary for this ability in pre-modern hominids would probably include the expression of systematic, organized behavior.

Robert Bednarik (1992) also agrees that humans used symbols during the Lower and Middle Paleolithic. He surveys hypotheses that reject the existence of symbolism prior to the Upper Paleolithic. This is important, in that Bednarik asserts that more iconic motifs display decreased symbolic content because iconicity exhibits replicative skills rather than abstract symbolism. Symbols must be deciphered in order to extract meaning, and this separates human beings from lower primates (Davidson 1992). In general, researchers do not find clearly representative art before the Upper Paleolithic. Thus, he infers from the record that all symbolism before the Middle to Upper Paleolithic transition was non-iconic. Further, variability in preservation should be acknowledged during any investigation of the Paleolithic record, due to the fact that harder materials tend to be preserved in the archaeological record for longer periods than soft materials. Thus it is reasonable that objects of stone, bone, and ochre would be fairly well preserved. Clarification of the chronology of some purported symbolic artifacts is also proposed. Bednarik infers that some objects currently classified as Upper Paleolithic may have actually come from earlier periods. Davidson and Noble have ascertained that the first evidence of symbolic language, the initial colonization of Australia, is more than 60,000 years old, most likely because many field researchers infer a systematic communication system from evidence of extended travel by water. This indicates that pre-modern hominids probably had the capacity for symbolic behavior, and the communicative aspect of possibly symbolic objects is stressed as well. A list of potentially symbolic *non-utilitarian* objects is included in this article, which is investigated in detail later.

Philip Chase and Harold Dibble (1987) take a cautious position, explaining the problems implicit in this debate and suggesting that the burden of proof lies with those who claim the existence of pre-Upper Paleolithic symbolic objects. Due to the scarcity of apparently symbolic artifacts produced by archaic hominids relative to those produced by anatomically modern humans, they conclude that insufficient evidence has been uncovered to infer symbolic behavior from tool and burial assemblages or possible art objects. Furthermore, they make a distinction between decoration and symbolism, because for them the former does not require the latter. Since the attribution of symbolic behavior to pre-modern hominids involves complex assumptions of behavior, they cite Ockham's Razor and point to plausible alternative explanations. The few finds mentioned in this article under the heading "Art" are claimed to have been found in contexts that did not require the influence of any symbolic or ritualistic content. Many grooved and pierced objects are dismissed as the results of non-human taphonomic processes, such as carnivory by hyenas. Chase and Dibble infer diffusion of symbolic behavior from the association of Neandertals in accepted Upper Paleolithic contexts in India and France because they coexisted for extended periods. Yet, they make a concession that the capacity for, rather than actual use of, symbolic behavior may have existed in the Middle Paleolithic. The design for this research attempts to minimize the risk of committing a Type 1 error that would invalidate the published conclusions.

In a response to Bednarik (1992), Chase and Dibble (1992) attempt to clarify many of the claims criticized by the former. They agree with the communication aspect inherent in the definition given by Bednarik for a symbol, yet stress that the *significance* of a symbolic object is best exhibited by repeated manifestation in the record. This would indicate cultural transmission, implying a widely shared or learned concept as exhibited by repeated motifs, such as those transmitted by spoken language, as seen in numerous symbolic objects. Chase and Dibble also stress the idea of intentionally symbolic behavior. Many marks may be incidental to the production of the object, and will briefly be discussed below in the context of style; however, objects with unintentional markings cannot be assumed to be symbolic. The taphonomic problems suggested by Bednarik are refuted in this article by the disproportion of artifacts relative to the time spans of Paleolithic periods. The claim that far fewer possibly symbolic objects have been uncovered from the Middle Paleolithic, which was several times longer than the Upper Paleolithic, is significant to them. Chase and Dibble suggest that objects should not be assumed to lack utilitarian function without careful consideration, and they supply ethnographic examples from modern populations of items that incorrectly may appear non-utilitarian. For example, Franz Boas explained that small bone pieces thought to be non-utilitarian in Eskimo cultures were actually toggles to attach ropes while hunting or fishing. Chase and Dibble further acknowledge that absolute refutation of a hypothesis, such as intentional human modification of objects, may not always be possible and therefore stresses the practice of comparison of alternative hypotheses. Comparison of perspectives becomes paramount in research problems for which many reasonable explanations exist.

Andrew Duff, Geoffrey Clark, and Thomas Chadderdon (1992) are among the first researchers to make a cohesive effort to clarify the definitions and criteria with which researchers in the field can investigate modes of behavior and expression evidenced by material residues. They reject the idea that repetitive patterning is required to infer symbolic capacity, primarily on the grounds that taphonomic processes tend increasingly over time to destroy rather than preserve symbolic objects. Therefore, they argue that few symbolic artifacts would be expected to survive to the present. They also discuss the communicative function of symbolic objects. Symbolic expression is argued to have varied with the social context of populations throughout the Paleolithic. However, Duff et al. concluded that general symbolic communication systems existed prior to the Upper Paleolithic. They also discuss the difference between *adjunct* and *isochrestic* style as proposed by Sackett. Adjunct style simply adds intentional markings to an item that already has a functional purpose, as in the case of the engraved hunting tools recovered from Arcy-sur-Cure, France (Mellars 1991). Isochrestic style may intentionally or unintentionally display production choices that differ culturally between populations, such as the intentionally carved female figurine from Galgenburg, Austria (Bahn 1996). An unintentionally modified "churinga" from Pin Hole Cave, England, also exemplifies this type of style (Kitching 1936). This distinction becomes

important in the investigation of symbolic content of proposed objects. First, because it is reasonable to suggest that a more passive style may be the primary mode of symbolic expression employed before the Upper Paleolithic, due to the facts that precision tools were not as common prior to the Upper Paleolithic, and behaviors of pre-modern hominids were somewhat more mechanistic than behaviors of anatomically modern humans. Additionally, claimed symbolic objects evidence the cultural or production choices of their makers.

This research focuses on proposed symbolic objects that pre-date the Upper Paleolithic. The criterion presented by Duff et al. (1992) on behalf of Chase is briefly reviewed here for clarification of the issues surrounding analysis of proposed symbolic objects. Unlike Mellars, Chase seems to reject standardization alone as potential indicator of symbolic behavior, since the production of an object from an idealized mental image does not always result from symbolic expression, as in the case of Middle Paleolithic stone tool kits. Thus, a claimed symbolic object should convey conscious choice of the producer, and isochrestic style alone does not constitute manifest symbolism, as such style may be unintentional. Claims for symbolic objects from the Lower and Middle Paleolithic are thus investigated by the following criteria. Objects accepted here as symbolic must meet all five criteria:

- i. They convey conscious production or cultural choices.
- ii. They exhibit isochrestic and adjunct style.
- iii. They exhibit pairing, standardization, or repetition of markings.
- iv. They do not conform easily to a hypothesis other than human modification.
- v. They are found in contexts that suggest human occupation.

Concentrating on purported non-utilitarian objects from the Lower and Middle Paleolithic, I begin by gathering information about artifacts presented by Robert Bednarik (1992) as possible examples of pre-Upper Paleolithic symbolic expression. Elements such as cultural association and dating were recorded onto a standardized data form along with a description of the object and suggested function(s). I agree with Chase and Dibble (1992) that any attempt to categorize possible symbolic objects according to style is arbitrary. Thus, the finds recorded for further investigation are listed alphabetically, noting both the type of raw material used and the culture. The strategy of this investigation includes the comparison of alternative hypotheses, as well as inference from contextual clues, to investigate claimed symbolic objects.

Bearing in mind that any categories employed are arbitrary, the objects inferred to be symbolic are grouped according to basic categories of raw materials. Of the objects surveyed, six primary categories emerged—bone, crystal, ochre, stone, teeth, and fossils and wood. The bone and stone categories are both the largest and most heterogeneous, followed by ochre, tooth, crystals, and fossils and wood, which are more homogeneous. This does not imply that objects grouped together are from similar cultures, only that the objects themselves were made from similar raw

materials (Bednarik 1992). The site locations of the following finds are also listed alphabetically in the appendix along with all other objects inferred to be symbolic, noting the raw material and cultural association. The original data set consisted of ninety-seven possible symbolic objects, of which fifty are accepted.

Many of the bone objects investigated were utilitarian in nature, although some of the hypothesis regarding implementation seemed spurious or speculative. The finds from Prolom II in the Crimean Peninsula provide a good example of incised bone (Stepanchuk 1993). Consisting of polished, engraved pieces with well-preserved markings, these small bone implements were inferred by Stepanchuk to be non-utilitarian because they provide a unique specimen from this region in the Middle Paleolithic. However, the striking resemblance to similar objects from the early Upper Paleolithic horizons of the Chatelperronian culture of France (Bednarik 1992) and to other bone objects displaying a "parallel incision" motif (Stepanchuk 1993) leads me to believe that the finds from these sites share a similar function as hunting tools. These objects may be further divided into those that are incised and those that are pierced.

Typical motifs for incised bone objects include paired markings, as in the case of bone objects recovered from Cueva Morín, Spain (Freeman and Echegary 1983), concentric or repeated patterns, like the serrations on the Repolusthöhle, Austria bones (Bednarik 1995), or those giving the impression of actual design, such as meandering patterns on bones from Pech de l'Azé, France (Marshack 1976). The pierced bone objects are an interesting sample, in that the majority also appear to be shaped. This is true of a reindeer phalanx from Pech de l'Azé, France (D'Errico et al 1997). However, since the outer cortex of the bone from Pech de l'Azé was stripped, the latter example provides less certainty because indicators of human modification, such as polish or thread marks from drilling, are lost along with the outermost surface. The Repolusthöhle bone is also significant, in that the artifact is both shaped and pierced. Although the original German source could not be deciphered, Bednarik (1995) discussed this find in a later article. Examples of pierced bone objects that have retained their natural form to varying degrees also have a place in this dichotomy, as the earliest examples would naturally show a greater degree of opportunism. A pierced foot bone from *Canis lupus* found in Bocksteinschmiede, Germany exemplifies this type of object (D'Errico et al. 1997). Although the metapodial is not shaped or polished, the posterior gouge appears consistent with lithic boring tool marks of the Middle Paleolithic, and no grooves around the pierced area are present to indicate predator carnivory (Blumenschine 1986, D'Errico et al. 1997).

The stone objects surveyed mainly consist of incised cores, such as the Quneitra, Israel stone. (Marshack 1997) This chert core bears incised markings arranged in concentric arcs. However, some of the incised stones bear markings similar to Neolithic finds such as that from Polesini, Italy, upon which a serpentine pattern was carved (Leonardi 1988). The most famous example of incised cupules as a motif hails from La Ferrassie, France. The cupules on this limestone slab are asso-

ciated with Neandertal burial 6 at that site, and the distribution of the marks appears non-random. Even earlier examples have been found in Acheulian horizons, such as the cupule motif in the Indian site of Bhimbetka, India (Bednarik 1995). Although I could not find the original source describing this motif, Bednarik notes that it is also associated with a hominid burial, leading me to wonder if a primitive form of "tombstone" may have existed prior to the Upper Paleolithic. This motif resembles Neolithic finds, such as the cupule motif from Argyll, Scotland (Bradley 1991).

The most compelling example of stone is the Berekhat Ram, Israel, figurine (Marshack 1997). Largely accepted as evidence of Acheulian symbolism, this core bears more than a passing resemblance to the iconic figure of a woman with a deliberately shaped shoulder. This finding was significant in that it invalidates Bednarik's claim (1992) that pre-Upper Paleolithic artifacts exhibit only non-iconic motifs. Further, the figurine is by far the oldest surviving representative of ancient mobiliar art. Other examples of iconic "feminine" symbolism have been recovered from Mousterian sites as well, such as a core incised to resemble a female figure from Predmost, Hungary (Jélinek 1988).

Many researchers dispute the symbolic implications of pieces of ochre found in a "handful" of sites (Chase and Dibble 1987). However, these examples of reddish iron oxide are significant in the light of ochre stains found on shaped rock artifacts and features, such as those from the Middle Stone Age site Pomongwe Cave, Zimbabwe (Walker 1987). The ochre category consists of objects geographically restricted to a corridor between Western Europe and East Africa. Lumps of ochre and hematite bearing striations have been recovered from pre-Upper Paleolithic horizons and are inferred to be the result of contact with surfaces, which are unlikely to have resulted from natural depositional agents (Bednarik 1992).

Another interesting pattern emerged from the data. The predominant colors from ochre-yielding sites are varying shades of red. Wreschner (1980) explains that an abundance of red coloration is probable in the context of hominid occupations because it has properties that stimulate modern humans. The vivid nature of this hue tends to draw attention, as well as excite people psychologically, as in the example of a traffic light. Thus, color may have been a significant factor in early human symboling as a warning or signal, although further research into the availability of various mineral resources would be necessary for consensus. Ochre is also commonly found in burials up to recent times, symbolically associating the color red with blood, and thus, life. Some sites, such as Klasies River Mouth, yielded more ferrous minerals than others, making opportunism a possibility (Singer and Wymer 1982), while other finds of red ochre may be more significant to researchers. For example, two lumps of red ochre were recovered from the remains of MSA dwellings in Olduvai BK II, Tanzania, indicating that these hominids used ochre for marking or other coloration purposes (Leakey 1958).

Curiosities falling into the categories of crystal, teeth, and fossils and wood emerge from contexts throughout the Lower and Middle Paleolithic. In fact, all of

the crystal objects accepted in this work were recovered from the Lower Paleolithic contexts, meaning that hominids actually were capable of making the conscious choice to collect these non-utilitarian objects more than 100,000 years ago. Sites such as Zhoukoudian, China are even more compelling because researchers found that quartz crystals with multiple intact facies were imported from great distances (Edwards and Clinnick 1980).

The teeth inferred to be symbolic in this research showed an equal degree of non-utilitarianism, like the horse canine associated with symbolic bone artifacts from Prolom II (Stepanchuk 1993). The design of objects made from teeth required much more modification than the crystal artifacts surveyed. Evidence of a shaped "plaque" from Tata, Hungary made from the molar of a mammoth suggests that ochre may have been used to color this mobiliar piece symbolically (Marshack 1976).

Finally, curio objects made from fossils and wood have survived, comprising the smallest genre of objects accepted into this data. The fossil objects appear opportunistic to a degree, whereas the wood objects exhibit more motivated modification. Examples from Tata and Gesher Benot Ya'aqov, Israel, illustrate this observation. The object from Tata is an oval stone with a fossil cast upon which a natural and an engraved line intersect in an X or cross pattern with no other visible markings or points of contact (Marshack 1976). The latter object is a portion of a shaped and polished wooden plank from a Lower Paleolithic horizon (Belitzky et al. 1991). Although these objects may be utilitarian in nature, the fossil nummulite from Tata does not appear to be retouched like normal tools (Marshack 1976), and the polished wood object from Gesher Benot Ya'aqov was recovered from the site's midden, or garbage dump, and may have been a malformed cutting surface.

Each category surveyed displayed a trend toward greater modification of softer materials. This implies a conscious production choice on the part of early hominids, as they may have lacked techniques to improve the precision of engraving on extremely hard surfaces. Erik Trinkaus (1989) has suggested that these robust hominids were not biologically capable of precision in manufacture. However, examples of pre-modern humans who coexisted with anatomically modern humans and adopted the technology of the latter in Arcy-sur-Cure (Mellars 1991), refute this claim by illustrating that choices were made in culture during the Middle Paleolithic. Thus, exposure to or isolation from cultural innovation may have played a significant role in behavioral expression before the Upper Paleolithic (Duff et al. 1992). The discovery of bone objects bearing zig-zag motifs from Middle Paleolithic occupations, such as the bone from Bacho Kiro Cave, Bulgaria (Kozłowski 1982), that closely resemble Upper Paleolithic engravings also negates a hypothesis of biological determinism (Marshack 1976). The restriction of these objects geographically to the broad corridor between Western Europe and the southeastern border of the African continent may further reflect the type of shared choices that Chase and Dibble (1987) require to infer symbolic meaning, because cultural developments in the New World were quite different from this region (Duff et al. 1992). The fact that early hominids achieved a high degree of precision in the manufac-

ture of utilitarian objects, such as tools and weapons (Mellars 1991, Kitching 1963), implies a strategy that varied according to purpose.

The body of objects accepted here as symbolic also exhibits varying degrees of intentional style. Compelling examples such as the fox tooth pendant from La Quina, France (Marshack 1976) and the Stránská Skalá, Czechoslovakia, vertebral engraving with a star-like motif (Bednarik 1995) are found even in Lower Paleolithic horizons, like the engraved rib from Pech de l'Azé (D'Errico et al 1997). However, the expected pattern of increased elaboration and iconicity over time does not necessarily hold true for this set of data; thus geographic isolation or exposure appears to be more likely contributing factor for technical lags or advances exhibited by some objects. The high degree of individualism in design also emerges as a trend. The lack of similarity in symbolic objects of the same region also contrasts with the typological nature of utilitarian objects (Chase and Dibble 1987), indicating the probability that hominids made stylistic choices before the Upper Paleolithic.

Common alternative hypotheses regarding the modification of symbolic objects rely on taphonomic and depositional explanations for markings and objects inferred to be symbolic. Bone objects must be scrutinized in light of the abundance of finds modified by animal digestion before deposition (D'Errico et al. 1997, Kitching 1963) and by insect and animal turbation after deposition. Furthermore, incised marks are considered in the light of utilitarian activities such as butchery practices. At some sites, unintentional markings do outnumber intentional markings significantly (Bednarik 1995). Stone objects and ochre must also be examined in comparison with objects modified by natural forces of erosion and deposition, such as wind abrasion or water polishing. An additional hypothesis states that the markings and shaped objects are unintentional except for the rare anomaly (Chase and Dibble 1987, 1992). Yet, enough evidence has been uncovered from objects that are unlikely to result from modification other than that of hominids to admit that symbolic behavioral expression in pre-modern hominids seems likely.

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Maslow's Hierarchy of Needs on a Cultural Level: Redefining Women's Roles Before, During and After the Mexican Revolution of 1910

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Abstract

In 1954, Abraham Maslow posited an hierarchy of basic human needs ranging from physiological needs to self-actualization. According to Maslow (1954), lower order needs, such as food, clothing, shelter, and sense of belongingness, to name a few, have to be satisfied in order for an individual to progress to the next level or stage of development. Although Maslow's hierarchy is believed to operate on an individual level, I propose that it operates on a cultural level as well. It is widely accepted in psychology that when lower tiers are threatened the individual must descend the hierarchy in order to meet those lower needs. Once the deficient needs are met, the individual is able to achieve, once again, the higher levels of the hierarchy (Ajila 162-4). I will specifically examine in this study the significant changes in women's social roles before, during, and after the Mexican revolution of 1910. The purpose of the present study is to examine how the cultural roles of women are redefined as social shifts occur creating needs in correspondence with the levels of Maslow's hierarchy. For example, when lower levels of the hierarchy, such as physiological and safety needs, were threatened by social upheaval, such as during wartime, Mexican women not only maintained their traditional social roles but assumed new ones as "military commanders, soldaderas, union organizers, tradesperson, and writers" (Soto 1). With the onset of peacetime, a cultural shift to concentration on the higher levels of need of Maslow's hierarchy was possible because lower level tiers were no longer threatened. Thus, Mexican women were able to achieve an unprecedented sense of self-actualization exceeding that of pre-war times.

INTRODUCTION

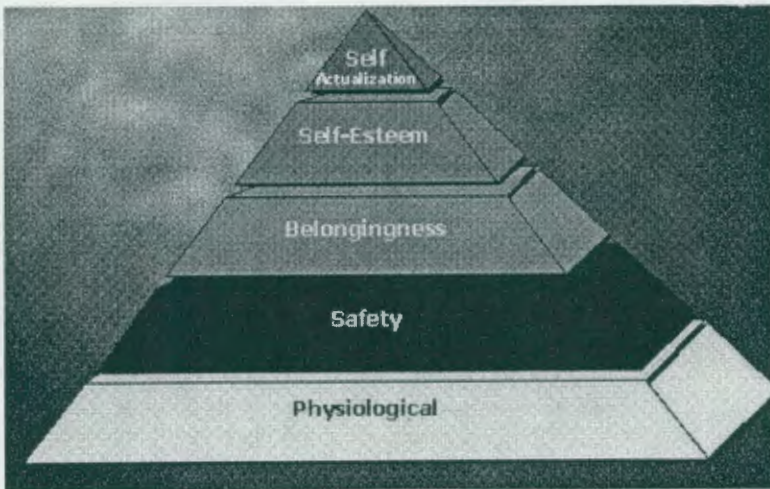
Abraham Maslow, a humanist psychologist, believes that "human beings are basically good and that their entire behavior flows from a single master motive, the drive toward self-actualization. Self-actualization is the means of defining who we are, what we want from life [and] what our beliefs are in life" (Thomas 82). In other words, people are motivated to seek frontiers of creativity and strive in order to reach the highest levels of consciousness. In 1954, Maslow hypothesized a five tiered hierarchy to explain what energizes, motivates, and directs human behavior. This hierarchy is often represented as a pyramid, where each of the five needs is arranged according to its importance. The first three lower levels of the hierarchy consist of physiological needs, safety needs, and belongingness needs. The last two levels are esteem needs and self-actualization needs (Ajila 162-4). To understand the position of each need within the pyramid, a brief description of each follows.

The first three needs, which are located at the bottom of the pyramid, are fundamental because these lower tiers represent the satisfaction of basic physical and psychological needs. For instance, the physiological needs are essentially biological and consist of the need for oxygen, food, and shelter, among others. These needs are the strongest, psychologically, because if an individual is deprived of

them he or she will die. Therefore, the successful fulfillment of these needs is necessary for the individual to ascend the pyramid (Ajila 162). Security needs occupy the next upper-tier and are mainly concerned with maintaining order and safety, keeping one free from danger or threat. An individual must feel secure, stable, and structured in his/her environment in order to ascend to the belongingness needs (Thomas 2). The next upper-tier emphasizes the basic psychological nature of human beings to identify and interact with others. For instance, this is the individual's need to have satisfying relationships with others, as well as the need for acceptance.

The top tiers in the pyramid are esteem needs and self-actualization needs. For the individual, the level of self-esteem needs relates to the need for autonomy, recognition, and respect from others. Also, it includes "internal and external esteem factors such as self-respect and status respectively" (Ajila 163). Self-actualization is concerned with the fulfillment of one's individual nature in all its aspects, all that one can be. This also includes the search to find one's identity, to develop and grow as a person, and to fully realize one's potential.

Maslow arranges human needs within a pyramid, which separates self-actualization needs and places them at the pinnacle. According to Maslow, lower needs must be satisfied, to at least a reasonable level, before the individual can effectively address other needs. This five-tiered hierarchy explains the motivations behind the individual's behavior to reach the highest levels of his/her capabilities.



MASLOW'S HIERARCHY OF NEEDS
Figure 1.1 Maslow's Hierarchy of Needs:

<http://www.commerce.ubc.ca/courses...%20Consumer%20Behavior/sld024.htm>

The purpose of the present study is to demonstrate how Maslow's hierarchy operates on a cultural level as well as an individual level, before, during, and after the Mexican Revolution of 1910, which resulted in significant changes in the roles of women within Mexican society. To prove that Maslow's Hierarchy of Needs operates on a cultural level, it is important to mention the economical, political, and social aspects of Mexico before, during, and after the Revolution of 1910. By mentioning such aspects and investigating their correlation with social changes and the roles of a particular group within that society within the life objectives of Maslow's hierarchy, we can follow how the focus of cultures as a whole shift. The first stage will construct an overview of the Diaz regime (1884-1910), the second stage the Mexican Revolution of 1910, and the third will focus on President Lázaro Cárdenas' administration (1934-1944).

The first cultural shift addressed by this study that marks the movement of Mexican society from one level of Maslow's Hierarchy to another occurs between 1884 and 1910. This period in Mexican history is known as the *Porfiriato*. Before the Revolution of 1910, President Porfirio Díaz governed Mexico from 1884 to 1910, a span of thirty-four years. The economic aspect of the *Porfiriato* allows the first shift within the levels of Maslow's hierarchy for Mexican society to occur. During the *Porfiriato*, the physiological and safety needs of the members of Mexican society were met because Mexico experienced great progress in modernization and industrialization. The Industrial Revolution of Mexico brought a rapid expansion of railroads, mines, and seaports. The nation's postal, telephone, and telegraph services were established, increasing national communications (Soto 7). Furthermore, between 1884 and 1900 "[t]he flood of foreign investments—almost \$1,200 million worth—helped gross national product to rise at an annual rate of 8 percent" (Bethell 74). Bethell adds that exportation was the main cause for Mexico's rapid economic progress during the period (75). This economic progress enabled Mexican society to ascend to the higher tiers of the hierarchy.

Changes under the *Porfiriato* transformed Mexico into a prosperous and industrial society, but, above all, it modified the traditional roles of women. According to Vallens, a change in women's roles began when families moved to urban areas in the hopes of reaping the benefits of a more financially secure way of life in the cities. As factories assumed the production of many household items, upper and middle-class women began to have considerable spare time on their hands. Women of the upper class employed their leisure time in frivolous entertainment and fancy dressing. Over time, some upper-class women thought that their new way of life discouraged initiative. They concluded that their leisure time could be employed in activities that created challenges for them. Thus, many became involved in activities that led to an increase in educational and occupational opportunities for women in general. For instance, in 1904 middle-class women founded the first feminist journal, *La Mujer Mexicana*. This feminist journal demanded more educational opportunities for women and an end to the sexual double standard (Macías 17). Due to the growing need for skilled workers in the emerging indus-

trial society, Mexican women began to organize training workshops. For example, the staff of *La Mujer Mexicana* formed the *Sociedad Protectora de la Mujer* and their first action was to establish a school-factory for the unemployed and working women (Macías 14). By becoming involved in such activities, women began to develop "a rather militant attitude and [began] to broaden their demands, such as equal rights and suffrage" (Vallens 4).

For economically disabled women, the type of change experienced was different. Due to an unstable income, women and families migrated to cities seeking a better life. According to Vallens, this change brought these women into contact with many different types of people, causing gradual but steady changes in their lives. By interacting with others, lower-class women began to view life differently as they acquired a new sense of identity. To help meet the new expenses, women set aside their traditional home and field centered occupations in order to look for employment within the new industries. By becoming employed, women were able to relate to other women who found themselves in the same situation. This experience helped them realize that other co-workers shared common hopes, problems, and experiences, both at work and at home. Vallens adds that this type of interaction raised women's level of consciousness to the point where they became involved and organized labor groups in order to improve and protect their working conditions. These experiences helped women to attain a stronger sense of power (8).

Like other women throughout the Western world, Mexican women proved to be dependable, hardworking, and industrious employees. Their previous attitudes of submissive obedience to male authority and their accustom to long hours of hard and tedious work allowed these women to successfully enter the industrial society of their time. Furthermore, their docility and willingness to work for low wages made them ideal employees. Vallens adds that this financial stability allowed women to sustain themselves and their children without the financial support of men (6-8).

Mexican women were ascending the levels of Maslow's Hierarchy of Needs not only because of the grandiose effects of the Industrial Revolution during the *Porfiriato*, but also because women were now obtaining educations. Before the *Porfiriato*, concern for general education in Mexico grew rapidly. In 1867, President Benito Juárez set an extensive agenda for a primary education by making education mandatory. In 1869, professional schools of medicine, mining, agriculture, fine arts, commerce, law, and an institution for educating the deaf were opened. General education made another dramatic rise during the *Porfiriato* (Soto 11).

By making education a major goal of the Díaz administration, the demand for teachers increased. In 1878, Mexico City's *Escuela Nacional Secundaria de Niñas* (later known as the *Escuela Normal de Profesoras*) had a rapid increase in enrollment. Art schools became popular among young middle-class women and enrollment of students increased by over one thousand pupils. Vocational schools enrolled more than one thousand students, including women from working-class families. By

building schools in rural areas, educational opportunities for women living in the provinces were also possible. By 1887, women held half of the nation's elementary teaching positions. During the *Porfiriato*, women obtained employment as teachers, nurses, and clerical workers. In 1910, five women graduated from the National University in Mexico City: two medical doctors, a dentist, a chemist, and a lawyer (Soto 12). These new opportunities and experiences enabled women to reach higher tiers of Maslow's Hierarchy.

The idea of educating women and allowing them to enter the labor force was generally accepted during the *Porfiriato*. With the immense desire to escape their limited lifestyle and with the influence of transforming Mexican society into a better nation, women began entering the teaching field. As in the rest of the Western world, the teaching field became an open door for women to acquire a profession during these years. The number of women attending both primary and secondary schools steadily increased. Of all the teachers in the nation during the *Porfiriato*, 51.3 percent were women and by 1910 this figure rose to 64.4 percent (Vallens 14-15).

As the *Porfiriato* came to its end, women from all socioeconomic levels had made several prominent gains. By far, the most prominent gain was in education (Soto 29). Middle-class women now attended schools and universities, while others obtained professional employment as teachers, nurses, and government employees. Women of the lower classes entered the labor force in the newly opened industries and factories. Overall, during the Díaz regime women became involved in labor organizations, others wrote and published books, magazines, and newspapers. At the outbreak of the Revolution of 1910, women also began to actively participate in the anti-Díaz movement (Vallens 7-9).

As stated earlier, when the stability of the lower tiers of Maslow's Hierarchy is threatened the individual must abandon his or her effort to achieve the higher levels to meet the demands represented in the lower levels. Mexican society as a whole descended the levels of the pyramid during the Revolution of 1910 because national safety and physiological needs were threatened. The many causes of the Mexican Revolution are nearly innumerable, but the main political cause was the succession of Porfiro Díaz to the presidency. Another political cause can be found in the fact that minimum wages did not increase during the Díaz regime. In other words, the poor were getting poorer while the rich were getting richer (Bethell 125). By 1910, Mexico's economy was declining and a balanced budget did not help the Indian agricultural worker "whose standard of living plummeted" (Quirk 1). When the Revolution broke out, Mexican people began to participate because of political and social injustices. According to Bethell, this movement represented "a massive, extremely violent and intensely nationalistic uprising, in which 'the people' destroyed the old regime, peasants reclaimed their lands [and] workers organized unions" (127).

When Mexican society descended the hierarchy in order to attend to its safety needs, women's roles underwent significant changes and were subsequently

redefined in accordance with societal needs. Women's "participation in the Revolution thrust women into many roles that traditionally had been reserved for men [such as] train dispatchers, telegraphers, and engineers" (Soto 31). Macías states that the educational and vocational opportunities offered women from 1876 to 1910 added to women's participation in the Revolution in an intellectual manner (26). For instance, Dolores Jiménez y Muro, a political radical, became involved in the *Complot de Tacuwaya*, a conspiracy which planned to bring Díaz' successor to power. When the revolutionary leaders agreed on the principal ideas of the plan, they asked Jiménez to draft the plan (Macías 29). According to Fredrick Turner, the active participation of women in the revolution helped equalize the relations between men and women because men recognized women as companions, consorts, and equals (Soto 31).

Women from all socioeconomic backgrounds played an active role in the Mexican Revolution of 1910. Despite the wide spread participation of women in that revolution, it is important to distinguish the different ways women of different socioeconomic status served the revolutionary cause. The upper-class women volunteered at hospitals and health institutions. Educated middle-class women participated actively as teachers and nurses. Others established political campaigns and donated money to revolutionary groups (Soto 31-2). Some "engaged in a number of undercover activities, including the gathering of arms and ammunition, expediting letters, and passing on information to revolutionaries" (Macías 39). Soto states that women journalists published revolutionary articles in national newspapers and founded women's magazines. For instance, the feminist organization *Hijas de Cuauhtémoc*, named after the Aztec emperor, demanded the resignation of Díaz, circulated anti-Díaz petitions, and staged protest marches (34).

Macías says that women of the lower classes found themselves caught up in the struggle and were actively involved in the military aspects of the revolution. The women who accompanied the military units were named *soldaderas*. Translations for *soldaderas* are camp followers, lady soldiers, or simply Mexican soldiers' women. The primary roles of *soldaderas* in the battlefield were "family and camp duties, foraging, cooking, sewing, and helping the sick or wounded" (Salas 18). Mexican *soldaderas* marched with soldiers for a variety of reasons. *Soldaderas* followed their men as they joined the Revolution. For instance, Manuela Oaxaca Quinn, mother of the film star Anthony Quinn, voluntarily served the revolutionary cause because her boyfriend asked her if she would become his *soldadera* (Soto 42). During the struggle, the *soldaderas* demonstrated their capabilities as soldiers and camp followers (42). Although women as a group descended the levels of Maslow's hierarchy during the Revolution of 1910, as did the rest of Mexican society, women not only maintained their traditional roles but, simultaneously, acquired new ones in order to meet societal needs. This revolution led to a period where new and unique opportunities enabled women to finally break the chains of tradition.

After the Mexican Revolution of 1910, the country experienced a political, economic, and social reconstruction that marks the third cultural shift within the

tiers of Maslow's Hierarchy (Bethell 241). During the 1930s, President Lázaro Cárdenas, in order to attain political stability, implemented a Six-Year Plan that specifically addressed the needs of *campesinos*, Indians, *obreros*, and women, who had been disregarded by previous administrations. During the implementation of his Six-Year Plan land grants quadrupled, arable lands were distributed, and labor agitation bore fruit. (Bazant 182, 184). Cárdenas promoted labor reorganization and created the *Confederación de Trabajadores de Mexico* (Confederation of Mexican Workers [CTM]). President Cárdenas valued the importance of education and promoted school reform. Education experienced a dramatic growth and thousands of new schools were built (Soto 121-122).

With the return of peace time in post-revolutionary Mexico, Mexicans were able to tend as a culture to the higher order needs posited by Maslow's Hierarchy. As the Mexican culture shifted its attentions to the higher levels of the hierarchy, Mexican women were able to achieve an unprecedented sense of self-actualization exceeding even that of pre-Revolutionary times. With Cárdenas' support, accompanied by the advent of increased educational opportunities, women reached far beyond their previously limited potentials. Cárdenas' administration created an era of enormous hope for Mexican women. He viewed their integration into the political structure as an essential need for achieving the national stability. The first officially sanctioned act of political integration occurred when President Cárdenas sanctioned the incorporation of the *Partido Femenista Revolucionario* into the National Revolutionary Party. The annexation of *Partido Femenista Revolucionario* was approved under the title *Acción Femenina* (Feminine Action). The goals of *Acción Femenina* were centered in the incorporation of women into the civic and political life of the nation. This incorporation worked for the attainment of women's equal rights. Women organized and established several campaigns against alcoholism, illiteracy, and religious fanaticism (Soto 123).

As Mexican women became more educated and involved in political activities, their activism and support for President Cárdenas' goals were rewarded. For example, in 1936 the National Revolutionary Party granted women full membership in both the labor union and *campesino* sections. During these primaries, the Federal District reported participation of 2,500 women. Other Mexican states also began to grant women the right to vote (Soto 126).

The cultural shift after the Mexican Revolution of 1910 brought women to participation in the higher tiers of Maslow's hierarchy, enabling them to pursue and attain goals undreamt of earlier. The 1930s were indeed years of high hopes for Mexican women. The support of President Cárdenas and the formation of numerous women's political organizations revitalized and changed women's perspectives on life (Soto 128).

CONCLUSION

Maslow's Hierarchy of Needs has been used in this brief study to demonstrate that even though the hierarchy is believed to operate on an individual level it can also operate on a cultural level as well. The before, during, and after stages of the Mexican Revolution of 1910 were selected to demonstrate the viability of applying Maslow's categories of need to aspects of cultural shifts within periods of social need. The three drastic shifts identified during this period resulted in drastic political, economic, and social reconstructions that redefined women's roles by providing opportunities for women to fulfill the needs identified within Maslow's Hierarchy that correspond to the character of the social needs of each period.

The first cultural shift occurred during the *Porfiriato*. With the onset of the Mexican Industrial Revolution, Mexico's economy secured the physiological and safety needs of Maslow's lower levels. Thus, Mexican society as a whole was able to attend to the development of self-esteem and self-actualization needs. During this period, women's roles were gradually changing because they were becoming educated, employed, and publishing articles and books.

The second culture shift occurred with the advent of the Mexican Revolution of 1910. Mexican society descended the hierarchy of needs in order to meet and secure the lower-level needs, embodied in ideas such as national safety. This shift resulted in another redefinition of women's roles within Mexican culture in which they not only maintained their traditional roles but acquired new ones as writers, tradespersons, union organizers, *soldaderas*, and military leaders (Soto 1).

The third shift was evidenced in Mexico during Cárdenas' presidency and the onset of peacetime. This third shift was possible because Mexico was able to attain stability in the political, economic, and social arenas. Since the needs of the lower levels of Maslow's hierarchy were no longer threatened Mexican society was once again able to turn its attention to the needs of the higher tiers. During this period Mexican women achieved an unprecedented sense of possibilities for attaining self-actualization that exceeded that of pre-Revolutionary times. At this particular stage, women began to acquire equal rights, suffrage, and enter into the educational/professional fields once denied them.

The information provided within this study demonstrates how the needs of Maslow's Hierarchy of Needs operate both on an individual and a cultural level. The three drastic shifts within Mexican society investigated created cultural focuses on needs that redefined women's roles to meet the needs created by the political, economic, and social changes experienced before, during, and after the Mexican Revolution of 1910.

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A Comparison of Knowledge of Infant Development Between Spanish Speaking Only Hispanic Mothers and English Speaking Hispanic Mothers

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Abstract

The Knowledge of Normative Infant Development Inventory (KNID) (Orme & Fickling, 1992) assesses parental knowledge of normal child development. Hispanics are the fastest growing minority, yet, without Spanish language tools little is known about parents' knowledge of infant development in this population. In this comparative descriptive pilot study, the KNID was first translated into Spanish. Ten Hispanic mothers who spoke only Spanish and had a child two months of age or younger were then asked to complete the 52-question KNID and a demographic sheet. The data were compared to results of a sample of 10 English speaking Hispanic mothers who completed the English version of the KNID as part of an on-going study in the School of Nursing at the University of Texas at Arlington. The purpose of this pilot study was to translate the KNID into Spanish and to identify if differences exist in knowledge of infant development between Spanish and English speaking Hispanic mothers. The findings showed that the Spanish version of the KNID was reliable and revealed no significant differences between the Spanish and the English speaking Hispanic mother's knowledge of infant development. Both groups answered greater than 50% of the questions incorrectly.

INTRODUCTION

Hispanics will be the largest ethnic group in the United States by the year 2000. As the Hispanic population in the United States increases, nurses become further aware of the need to provide culturally sensitive care to this population. Assessing parents' knowledge of infant/child development is the nurses' first step in assisting parents to provide a safe and stimulating environment for their children. Unfortunately, without Spanish language assessment tools, very little is known about parents' knowledge of infant development in the Hispanic population. Providing reliable assessment tools in Spanish will enable nurses to assess parental knowledge of infant development and plan culturally congruent care.

LITERATURE REVIEW

Research has indicated that inadequate knowledge of infant/child development may be a determining factor in the parents' struggle to provide a safe and stimulating environment for their children (Mrazek, Mrazek, & Klinnert, 1995; Orme & Fickling, 1992; Vukelich & Kilman, 1985). Child abuse, accidental injury, and developmental delays have also been identified as unfortunate outcomes of parents' lack of knowledge of child development (Gullo, 1988, Mrazek, 1993, Reiss, 1988). Each year, over 3 million children in the United States are victims of abuse (National Committee for Prevention of Child Abuse, 1996). Accidental injury, the most significant public health threat facing children today, is the leading cause of death in children ages one to four (Ashwell & Droske, 1997). Developmental delays minimize school performance and limit the child's maximum potential

(Achenbach, Howell, Aoki, & Rauh, 1993; Whitehurst & Fischel, 1994). Knowing that low income is a major factor for increased risk of abuse, injury, and developmental delays in children and that one out of three Hispanic children live in poverty (National Safekids Campaign, 1995), the Hispanic population requires special attention. Currently, very little information exists about Hispanic parents' knowledge of child development (Zepeda & Espinosa, 1988).

Although many tools have been used to measure development, these tools have not had their psychometric properties validated. The Knowledge of Normative Infant Development Inventory (KNID) is a tool to assess parental knowledge of normal child development that has demonstrated acceptable reliability and validity (Orme & Fickling, 1992). However, the KNID has been tested on a sample of mostly African Americans (65%) and whites (21%) with no significant percentage of Hispanics. Mothers expected motor skills to occur earlier than the established norm, while they expected social/cognitive skills to occur later than the norm. A study in progress is testing the KNID with English speaking Hispanic mothers (Smith, 1998). The purpose of this comparative descriptive pilot study was to translate the KNID into Spanish and to identify if differences exist in the knowledge of infant development between Spanish and English speaking Hispanic mothers.

METHOD

Instrument

The Knowledge of Normative Infant Development Inventory (KNID)(Orme & Fickling, 1992) assesses parental knowledge of infant development. The KNID contains 52 declarative statements of infant age and developmental tasks (for example, "most infants can eat finger foods when they are 9 months old"). Participants are asked to choose if they "AGREE" the task can be accomplished at the stated age. If they disagree and think that most infants can accomplish the task at an earlier or later age, they can choose "YOUNGER" or "OLDER." If they don't know at what age a child can accomplish the task, they can choose "NOT SURE." The KNID is scored by measuring the number of incorrect responses. The KNID was tested with a sample of 273 mothers in the northeastern United States (Orme & Fickling, 1992). Content validity was established by expert reviewers. Reliability was demonstrated with the overall Cronbach's alpha coefficient of .68. Factor analysis identified a 2 factor solution with alphas of .83 and .86 respectively.

Translation

Back-translation (Brislin, 1970) was used to translate the KNID to ensure cross-cultural equivalence (Flaherty, et al., 1976). First, the demographic data sheet and the 52-question KNID were translated into Spanish by a bilingual graduate nurse to ensure equivalence of meaning of health-assessment-related terms. Second, the Spanish version of the KNID (KNID-SP) was translated back into English by a bilingual college graduate. In addition, two other bilinguals were asked to do the same in order to become familiar with the KNID- SP and to facilitate the third step

in back-translation, the review. The KNID-SP was reviewed among the four translators to ensure cross-cultural equivalence. Finally, three people from the Hispanic community were asked to proof-read the KNID-SP for confusing or misleading phrases and terms. The appropriate changes were made based on their input.

In translating the KNID into Spanish, the guide provided by Brislin (1976) was used which included the following:

1. Use (or appropriately revise) a questionnaire written at an easy level of difficulty (3rd grade English).
2. Keep sentences simple and short (16 words or less).
3. Repeat nouns rather than pronouns.
4. Avoid possessive forms when possible.
5. Avoid metaphors and idiomatic phrases.
6. Use specific rather than general terms (e.g., specific conditions such as measles or appendicitis, rather than the general term "disease").
7. Avoid sentences with two different verbs if the verbs suggest different actions.
8. Avoid words which are open to wide interpretation (e.g., "often", "probably", or "beyond").
9. Avoid the subjective mode (e.g., verbs using "would" or "could"). (p. 22)

Cross-cultural equivalence was approached using the following three stages stated by Flaherty et al. (1976):

1. Content equivalence: to ensure that the content in each item in the instrument has consistent cultural relevance.
2. Semantic equivalence: to ensure that the meaning of item remains conceptually and idiomatically the same.
3. Technical equivalence: to ensure that the methods of assessment (interviews, observation, self-report) elicit comparable data. (p. 258)

In order to ensure sensitivity to the local Spanish language variations of the mostly Mexican population, all four people involved in the translation process were of Mexican heritage. Their first language was Spanish, two had a college degree in Spanish, one was in her last semester of college majoring in Spanish, and the graduate nurse had a minor in Spanish. In this pilot study, the translation included obtaining clarity in meaning of the questions being asked while maintaining content equivalence. Translation of words such as "eat finger foods", "peek-a-boo", "go bye-bye", "babble", and "scribble" required several translations, since no common words or complementary terms exist in Spanish. The decision was made to translate "eat finger foods" to "*comer con las manitas*", which translates to "eat with their tiny hands"; "peek-a-boo" to "*escondidas con las manos*", which translates in English to "hide and seek with the hands"; "go bye-bye" to "*amos ya (vamonos ya)*", which translates to "go, now"; "babble" to "*decir borucas (hacer ruido con la*

boca)", which uses the more common slang word "decir borucas" for the least known, yet, correct word "balbucear"; and "scribble" to "hacer garabatos (o rayar)", thus limiting the chances of misinterpretation.

Sample

Radio advertisement and networking sampling were used to obtain 10 Mexican mothers from the community, 18 years or older who spoke only Spanish and had a child two months of age or younger. The decision to include only mothers who had a child 2 months of age or younger was to identify parents' knowledge of infant development early in the child's life. Only mothers who had been in the United States less than 7 years were included because of the desire to have a sample more closely immersed in Hispanic rather than American culture. One volunteer was recruited from the radio program *Linea Abierta* from the Spanish radio station La Fabulosa KESS 1270 AM. Six participants were approached as known acquaintances of friends, and the other three participants were recruited from the local Catholic church and the local Hispanic supermarket.

The sample included 10 females, 6 were married and 4 were single. Two were first-time mothers and 8 had more than one child. The ages of the participants ranged from 19 to 38, with a mean of 25.2, a mode of 24, and a median of 24. They were all born in Mexico and spoke only Spanish. The range of years lived in the U.S. was 1 to 7. Their educational level ranged from 3 years (10%) to 12 years (10%), with a mean of 7.4, a mode of 9, and a median of 7.5 years. The project was explained to the participants and they were invited to complete a demographic sheet and the KNID-SP. Following verbal consent, they were given the option of reading the demographic sheet and the KNID-SP or having the questions read to them. They were asked to choose one of the options, "DE ACUERDO", "ANTES", "DESPUES", or "NO ESTOY SEGURA."

The comparison sample of English speaking Hispanic mothers was taken from the ongoing study in the School of Nursing at the University of Texas at Arlington. This comparable sample was made up of 10 Hispanic mothers, 18 years of age or older, who had a child two months of age or younger. Four were first-time mothers and 6 had more than one child. Six of the mothers were single and 4 were married. Their ages ranged from 18 to 32, with a mean of 23, a mode of 20, and a median of 20.5. Seven of the mothers were of Mexican descent, 2 were of another Latin country descent, and 1 was of Spanish descent. Five of the mothers were born in a foreign country and five were born in the U.S. The number of years lived in the U.S. ranged from 6 to 32. Their educational levels were 10 (20%), 11 (20%), and 12 (60%) years, with a mean of 11.4, a mode of 12, and a median of 11.5.

There were no significant differences in the variables of mother's age, marital status, ethnic heritage, ethnic identity, higher education, number of children, and ages of children. The groups differed on years of education ($p = .002$) with the Spanish mean of 7.4 and the English mean of 11.4, and the number of years lived in the U.S.A. ($p = .001$), the Spanish mean of 3.9 and the English mean of 16.9.

FINDING

The results of the KNID-SP and the KNID-EN in this pilot study were tabulated using the number of incorrect items. The mean percent of incorrect answers for Spanish speaking and English speaking mothers is shown in the table below.

GROUP STATISTICS ON INCORRECT ANSWERS OF PILOT STUDY

GROUP	NUMBER OF PARTICIPANTS	MEAN IN PERCENTAGE	STANDARD DEVIATION	STANDARD ERROR MEAN
SPANISH	10	58.0769	16.3631	5.1745
ENGLISH	10	50.1923	11.4831	3.6313

A t-test revealed no significant differences in the knowledge level of infant development between the Spanish speaking group and the English speaking group ($p = .273$).

Of the 52 questions in the KNID-SP, 27 dealt with a motor skill and 25 dealt with a cognitive/social skill. Over all, the Spanish speaking mothers expected their infants to achieve motor skills earlier than the established norm as evidenced by more than 50% of mothers selecting the incorrect answer on 15 of the 27 (55%) items dealing with motor skills. Of the more than half of the Spanish speaking mothers selecting the incorrect answer on 14 of the 25 (56%) items dealing with social/cognitive skills, most expected their children to develop those skill at an older age (64%) and others were not sure (35%).

The English speaking mothers expected their infants to develop both motor skills and social/cognitive skills at an older age. The English speaking mothers selected the incorrect answer on 12 of the 27 (52%) questions dealing with motor skills, instead, expecting, the tasks to be achieved at an older age (74%) or a younger age (25%). Of the 25 questions dealing with social /cognitive skills, the English speaking mothers chose the incorrect answer on 13 (52%). Most expected their infants to accomplish the tasks at an older age (70%) and some expected them to do so at a younger age (30%).

Total reliability was also measured for both versions of the KNID. The Cronbach's alpha coefficient for the KNID-SP was .87. Cronbach's alpha coefficient for the KNID-EG was .70.

DISCUSSION

Even though there were no significant statistical differences between the two groups, there were clinical concerns in the differences. Safety issue concerns were revealed when twice as many Spanish speaking mothers (40%) did not know

that it's not possible for infants to "take a bath without the help of an adult when they are 2 years old" as compared to the English speaking mothers (20%). Furthermore, the overall mean of incorrect answers was high for both the Spanish and English speaking Hispanic mothers. None of the mothers, Spanish speaking and English speaking, knew that "most infants begin to reach for things when they are 6 months old". This lack of knowledge could lead to accidental injuries from electrical wires, sharp objects, and small objects that can block the air way passages. With accidental injury, identified in the literature as the most significant, yet under-recognized public health threat facing children today and the leading cause of death in children ages one to four (Ashwell & Droske, 1997), these findings are particularly relevant.

Both the Spanish speaking (70%) and the English speaking (50%) mothers did not know that "most infants can say 6 to 20 words you can understand when they are 18 months old". When mothers were asked if most infants could "begin to recognize their mother's voice at 3 months of age", most (70%) of the Spanish speaking mothers answered incorrectly while some (40%) of the English speaking mothers answered incorrectly. Mothers' lack of knowledge of when the child should be able to hear could lead to delays in identifying infants with hearing problems. Professional intervention would be delayed leading to language and cognitive problems in children, especially among the Spanish speaking population.

Toilet training is one of the major tasks at the toddler stage. Half of the Spanish speaking mothers (50%) believed that infants could be "fully toilet trained" when they were 1 year old. Physical and emotional readiness for toilet training does not begin until 18 to 24 months. Spanish speaking mothers earlier expectation is of special concern because children are at higher risk for abuse when the mothers' high expectations are not met. Cases of child abuse have increased in the United States by 45% since 1987 (National Committee for Prevention of Child Abuse, 1996).

Overall, the mean of incorrect answers was high for both the Spanish and English groups. The Spanish speaking mothers expected their children to develop motor skills earlier and social/cognitive skills later than the norm. These findings agree with Orme & Fickling's sample (1992). Orme & Fickling (1992) found a positive correlation between early expectations and maltreatment ($r = .61$). English speaking mothers expected their children to develop both motor and social skills later than the norm. Early expectations and late expectations of infant development are of concern because of the potential child abuse, language and cognitive delays, and accidental injury.

Cronbach's alpha coefficient indicates that the KNID-SP was reliable for the small population sample in this pilot study. The total scale alpha of .86 for the KNID-SP was higher than the KNID-EG's .70 which was similar to the .68 obtained by Orme & Fickling (1992). The higher alpha could be because cultural differences prevented literal translation of some items. For example, the word "peek-a-boo" which was translated to "*escondidas con las manos*" is actually the definition of "peek-a-boo" – "hide and seek with the hands". This cultural translation may have re-

sulted in an easier to understand questionnaire that was more internally consistent.

CONCLUSION

Although all findings must be interpreted with caution because of the small sample, it is apparent that Hispanic mothers, Spanish or English speakers, do have incorrect knowledge about infant development. It is disconcerting to think that only half of the mothers know when their children should be able to accomplish the most common developmental skills. Potential injury concerns, child abuse, and developmental delays can be pointed out from the data gathered.

Nurses should assess parental knowledge of infant development and teach mothers about infant development even before the child is born. Nurse educators should formulate educational pamphlets at a low elementary reading level and in Spanish for the Spanish speaking population. Translators with knowledge of the local community language variations should be preferred when translating tools. Nurse researchers should include a significant percentage of Hispanics in their research work. Nursing schools should encourage students to take Spanish classes as electives, especially in cities and towns where Hispanics make up a large number of the population.

The reliability of this pilot study was strong, but it remains to be seen if it holds true for a larger number of subjects. The standard 10 subjects per question (52 in the KNID-SP) for a total of 520 subjects would be needed to adequately determine reliability. While this study involved Mexican mothers only, further research should also involve fathers and parents from all of the Latin countries. Since grandmothers and aunts often provide child-rearing information to parents, grandmothers' and aunts' expectations for infant development should also be studied. Further research is needed to investigate the most disturbing findings, such as why Hispanic mothers expect their children to be fully toilet trained during their first year of life but don't expect them to begin talking until they are 18 months of age.

Hispanics will be the largest ethnic group in the next millenium. Providing appropriate assessment tools in Spanish will assist in developing a body of knowledge about cultural beliefs and expectations for child development. This will enable nurses to provide culturally sensitive care to this population.

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Effects of Self-esteem, Self-efficacy and Message Frame on Exercise Behavior

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Abstract

Message-framing techniques have been studied in an attempt to find effective ways for motivating individuals to engage in healthy behaviors. The current study was designed to investigate the influence of self-esteem (SE) and self-efficacy (SEF) on the type of message that would be most effective in increasing exercise behavior. One hundred and nine college students were given one of three framed messages (a positively framed, a negatively framed, or a combination-framed message) regarding exercise-health information. SE, SEF, and typical exercise behavior were measured. After reading the message, participants' intentions to exercise were assessed. In a follow-up measure, actual exercise behavior for the two-week interim period was assessed. An overall main effect of message on changes in behaviors and intentions to exercise was predicted, qualified by an interaction with SEF and SE. The results obtained did not support the predictions. Exploratory analyses revealed several interesting correlations suggesting avenues for future research.

Effects of Self-Esteem, Self-Efficacy and Message Frame on Exercise Behavior

Researchers have studied message framing effects in an attempt to find effective messages for persuading individuals to adopt healthy behaviors (Rothman & Salovey, 1997). Conflicting results in the message framing literature have kept researchers busy (Rothman & Salovey, 1997; Rothman, Salovey, Antone, Keough, & Martin, 1993; Smith & Petty, 1996; Maheswaran & Meyers-Levy, 1990; Robberson & Rogers 1988). Persuasive messages can present or "frame" the same information in terms of negative outcomes and risks, or positive outcomes and benefits.

A gain-framed message (also called positive-framed message) focuses on attaining a desired outcome or avoiding an undesired outcome (Rothman & Salovey, 1997). Positive-framed messages generally focus on the benefits to be obtained from performing a specific behavior. In contrast, a loss-framed message (also called negative-framed message) focuses on attaining an undesired outcome or failing to attain a desired outcome, which are both considered to be losses (Rothman & Salovey, 1997). Negative-framed messages generally focus on the benefits lost by *not* performing a specific behavior.

A number of different factors can play a role in determining which message frame is most effective in promoting healthy behaviors. Perhaps the most important factor is the nature of the target behavior itself. Health behaviors can be classified into one of three categories: preventive, detective, or recuperative (Rothman & Salovey, 1997). Preventive behaviors prevent the onset of a health problem (e.g. aerobic exercise prevents obesity) and are seen as safe behaviors (i.e., not causing any risks). Detection behaviors detect the development of a health problem (e.g., breast self-examination, HIV testing) and can be interpreted as risky because engaging in the behavior may lead one to discover that something is wrong.

Finally, recuperative behaviors cure or treat an on-going health problem (e.g. chemotherapy to treat a cancerous growth) and are considered to be necessary interventions. Recuperative behaviors are similar to prevention behaviors in that they represent risk-averse or safer options than no treatment (e.g. opting to undergo chemotherapy is ostensibly a safer option than to do nothing when dealing with cancer (Rothman & Salovey, 1997).

Prevention and detection behaviors have received the most attention in message framing research because of their differences in perceived risk. Prospect theory is a decision making perspective which asserts that people prefer riskier interventions (are risk-seeking) when faced with a problem with potential losses but prefer safer, more certain interventions (are risk-averse) when the problem is framed in terms of potential gains (Tversky & Kahneman, 1982). For example, a person who is suffering from cancer will be more inclined to choose chemotherapy as an option (even though it contains many risks and may not work), rather than do nothing and most likely die. In this instance, the person's alternative is a loss, so taking a risk that may produce a positive outcome seems favorable. In contrast, when someone is healthy and is confronted with the option to engage in a behavior that may improve the quality of his or her health, but that also contains some risk, he or she may be less inclined to adopt the behavior. The rationale behind this is that maintaining one's health is a priority, and actions that may jeopardize it are objectionable. Prospect theory has helped explain some of the different findings in the message-framing literature (Rothman et al., 1993; Smith & Petty, 1996). The message framing postulate of prospect theory states that when individuals are faced with a problem that contains risks or uncertainty they evaluate the information either in terms of gains (i.e., focusing on attaining a desired outcome, or avoiding an undesired outcome) or in terms of losses (i.e., focusing on attaining an undesired outcome or failing to attain a desired outcome), depending on their reference point. Consequently, their choice can be manipulated by altering the way the information is presented to them (Smith & Petty, 1996). The same is true for information that contains no risks or uncertainty. Here again, changing the frame of the message may result in a change in one's preference toward the same information.

Detection behaviors are viewed as risky as their purpose is to detect possible problems (e.g., disease, infection, virus). Avoiding the issue altogether is a common choice among individuals, and motivating them to check and see if they may be affected can be difficult. It is often more comfortable for individuals to avoid a potentially risky situation than to seek out and determine if one is a victim. Because of the risk of potentially finding out that one has an illness, the tone of the message seems to be particularly important in motivating that behavior. Meyerowitz and Chaiken (1987) found that individuals who received a negatively framed message about the importance of breast self-examinations (BSE; a detection behavior) had greater intentions and follow-up BSE behaviors than those who received a positively framed message.

Prevention behaviors, on the other hand, are not perceived to be risky at all

because these behaviors essentially aid individuals to stay healthy. For these types of behaviors, focusing on the negative aspects of the issue is less effective. In a recent study, positively framed messages were found to be most effective in motivating individuals to request sunscreen with SPF 15, which has been proven to be an effective method of preventing skin cancer (Rothman et al., 1993). For prevention behaviors, such as aerobic exercise, focusing on the benefits or gains of performing the behavior should be most effective when attempting to motivate individuals to perform that behavior. The current study was designed to investigate message-framing effects in the area of regular aerobic exercise. Given that aerobic exercise is a preventive behavior, we anticipated that positively framed messages would be most effective in motivating persons to increase their exercise behaviors and intentions.

Other factors that may influence message-framing effects include message involvement (Maheswaran & Meyers-Levy, 1990; Smith & Petty, 1996), strength of the message (Smith & Petty, 1996), efficacy of the behavior (Rothman & Salovey, 1997; Rothman et al., 1993; Meyerowitz & Chaiken, 1987), and personality characteristics (Tykocinski, Higgins, & Chaiken, 1994; Smith & Petty, 1996). The current study investigates how certain personality characteristics, specifically, self-efficacy and self-esteem, may influence the effectiveness of a message.

Bandura's Self-Efficacy Theory states that when determining whether or not an individual will initiate a behavior, the person's level of self-efficacy will play a key role (Bandura, 1977). More specifically, Self-Efficacy Theory states that a high level of self-efficacy is necessary in order for an individual to initiate a behavior. In an investigation of aerobic exercise, individuals with high self-efficacy had higher levels of intrinsic motivation to exercise (McAuley, Wraith, & Duncan, 1991). We included individuals' self-efficacy as a variable in this study, regarding it as a necessary component when initiating a health behavior.

Self-esteem can also play a role in the kinds of information one attends to. In general, persons with low self-esteem tend to focus their attention on negative attributes rather than positive ones. Conversely, person's with high self-esteem generally tend to focus on the positive details rather than the negative (Myers, 1995). Tykocinski, Higgins, and Chaiken (1994) found that persons who display discrepancies between how they actually see themselves and how they ideally want to be (actual/ideal discrepancies), which is closely associated with low self-esteem, were most persuaded by negatively-framed messages. Rhodes and Wood (1992) also found that self-esteem played a role in message reception and influence. Further, research has found a positive correlation between self-esteem and levels of exercise (ACE, 1998; Taylor, 1995). In the current study, self-esteem was predicted to influence the role of message framing on exercise behavior.

Overview

The current study attempts to investigate the effects of personality traits, specifically, global self-efficacy (SEF) and self-esteem (SE), on the effectiveness of mes-

sage frame in motivating an increase in one's exercise behavior. Participants (both exercisers and non-exercisers) were given one of three framed messages (a positive-frame, a negative-frame, or a combination-frame) and were measured on their self-efficacy and self-esteem levels. Participants' initial exercise behavior was measured prior to receiving the message; after receiving the message, intentions for future exercise were assessed. Actual exercise behaviors were measured two weeks later in a follow-up survey.

Overall, given the preventive nature of exercise behavior, a main effect of message frame was expected, where the positively-framed message would be most effective and the negatively-framed message would be the least effective in motivating individuals to increase their exercise levels. This main effect was expected to be qualified by an interaction with self-efficacy and possibly self-esteem. Specifically, self-efficacy was expected to be a necessary condition in increasing exercise behavior. Thus, no significant effect of message frame was expected for persons with low SEF. However, for individuals high in SEF, message-frame effects were predicted to be moderated by self-esteem (via its influence on the types of information people pay attention to): High SEF individuals who are also high in self-esteem should show the greatest response in the positive-frame condition, whereas individuals high in SEF but low in self-esteem were expected to show the greatest exercise increase in the negative frame condition.

Methods

Participants and Design

Participants were students from the University of Texas at Arlington. Twenty-five (25) of the 129 participants were students enrolled in the Introductory to Psychology course who received partial course credit for participation. Thirty-five (35) participants were students enrolled in an Introductory Economics course who received extra credit for participation. Sixteen (16) participants were students enrolled in a Human Relations course who received extra credit for participation. The remaining 33 participants were graduate students enrolled in a computer course in the School of Social Work, who participated on a volunteer basis. Two (2) participants' data were excluded from analyses due to physical injuries influencing their responses on the dependant measures. Participants were randomly assigned to one of three message-frame conditions (negative, positive, or combination frame). Participants were classified into groups of high or low self-esteem, and high or low self-efficacy, depending upon their scores on these measures. The experiment was a 3 (message framing: negative vs. positive vs. combination) X 2 (self-efficacy: high vs. low) X 2 (self-esteem: high vs. low) factorial design.

Procedure

Questionnaires were administered in a classroom setting in groups of 5 or more participants at a time. The study was introduced to the participants as an "exercise attitudes" survey. Participants were instructed to work straight through

their questionnaire booklets (see Appendix A). The first section of the questionnaire was designed to assess the participants' current exercise behaviors and their attitudes regarding their current exercise routines. Participants were provided a definition of aerobic activity, then asked to report how many times per week they regularly engaged in aerobic activity and to state the average duration of each session. Participants were also asked to list any additional physical exercise in which they regularly engage, aside from aerobic activity. Following those questions, a series of Likert-type items were administered assessing their attitudes regarding their exercise routine, self-esteem (Rosenberg, 1965), self-efficacy (Paulhus, 1983), need for cognition (Cacioppo & Petty, 1982), and personal need for structure (Thompson, Naccarato, & Parker, 1992; Neuberg & Newsom, 1993).

In the second section, participants were presented a one-page article of health information regarding regular exercise. The article was framed either in terms of the disadvantages of not exercising regularly (negative frame), the advantages of exercising regularly (positive frame), or a combination of both the disadvantages and advantages of regular exercise (combination frame). All message conditions contained factually equivalent information. After reading the article, participants stated their intentions to exercise, then completed another series of Likert-type items assessing their commitment to their intended exercise program and their attitudes toward exercise in general. Participants were thanked for their cooperation and dismissed. Two weeks later, a follow-up measure was taken (see Appendix B). Participants were given another questionnaire in the same setting assessing their actual exercise behavior over the prior two weeks. Upon completion of the survey, participants were debriefed and thanked for their cooperation.

Results

The focal dependent variables were participants' intentions to increase their exercise participation after receiving the exercise message, and changes in their actual exercise participation in the two-week follow-up period. Both of these measures were computed using difference scores with initial/typical exercise as the baseline.

It was predicted that there would be an overall effect of message, such that the positive-frame message would be most effective in motivating individuals to exercise. A one-way ANOVA found no effect of message frame on changes in behaviors and intentions to exercise ($F < 1.00$).

Higher individual self-efficacy was predicted to be a necessary precursor to being persuaded to engage in a health behavior (exercise). Analyses revealed a significant positive correlation between the level of self-efficacy and initial, typical exercise behavior ($r = .200$; $n = 107$; $p < .05$). However, one-way ANOVAs revealed no effect of self-efficacy on a change in intentions or actual exercise behavior. Further, within high self-efficacy individuals, self-esteem did not interact with message-frame to influence any significant changes in exercise intentions or behavior (all $F_s < 1.00$).

Exploratory correlational analyses

Post hoc correlational analyses revealed significant positive correlations between total satisfaction with one's typical exercise regimen and the amount of one's initial exercise ($r = .593$, $n = 106$, $p < .01$), behavioral change ($r = .257$, $p < .05$, $n = 83$), intentions to increase exercise behavior ($r = .323$, $p < .01$, $n = 105$), and health beliefs ($r = .217$, $p < .05$, $n = 105$). The findings suggest a relationship among these variables worth exploring. Specifically, the correlation between satisfaction with one's current exercise routine and one's willingness to increase that routine after reading about the effects of exercise suggests that initial participation in an enjoyable exercise program may increase one's willingness to make a more rigorous exercise commitment. Moreover, the role of positive health beliefs in these analyses suggests it as another avenue for future intervention.

Discussion

In the message-framing literature, positively-framed messages are generally found to be most effective in motivating preventive health behaviors (Rothman & Salovey, 1997; Rothman et al., 1993). Regular exercise is considered to be a preventive behavior because it can prevent the onset of many health problems such as obesity, high cholesterol levels, high blood pressure and heart disease (American Council on Exercise, 1998). Therefore, it was hypothesized that positively-framed messages would be most effective in motivating individuals to increase their exercise behavior.

It has also been found that personality traits, such as self-esteem and self-efficacy, can affect the type of information one attends to, as well as the likelihood that one will engage in a behavior (Myers, 1995; Bandura, 1977). Therefore, self-esteem and self-efficacy were predicted to influence the effect of message frame on changes in behaviors and intentions to exercise. High levels of self-efficacy were hypothesized to be necessary in order for an individual to engage in a behavior. A positive correlation between initial/typical exercise and self-efficacy lends partial support to this hypothesis.

In the current investigation no interactions between self-esteem, self-efficacy and message type were found. No main effects of message type, self-esteem, or self-efficacy on increased behaviors or intentions were found. These null findings can be rationally and theoretically explained. Motivating individuals to exercise regularly has proven to be difficult (Taylor, 1995; Cotton & Goldstein, 1987; McAuley, Wraith, & Duncan, 1991). The factors that contribute to the struggle of motivating individuals to exercise include personal self-efficacy, knowledge of the benefits, lack of time, lack of energy, health beliefs, and costs (to name a few). With complex behaviors like exercise, a one-page summary of health-related facts may be inadequate to see results in increasing and maintaining higher levels of exercise (Dishman, 1991).

The initial level of typical exercise in individuals with high self-efficacy

was found to be higher than individuals with lower levels of self-efficacy. A positive correlation was also found between self-efficacy and health belief scores. In general, people tend to show consistency between their attitudes/beliefs and their behaviors (though numerous exceptions do arise and draw the attention of researchers). This attitude-behavioral consistency could possibly explain part of the lack of increase in exercise intentions or behaviors. Those who believe that exercise is important to one's health may already be performing the level of exercise they feel is necessary to maintain one's health, therefore leaving less room for a message effect.

Self-esteem literature suggests that persons with high or low self-esteem are more difficult to persuade than those with modest levels of self-esteem (Rhodes & Wood, 1993). People with high self-esteem are apparently confident enough with their own choices and behaviors and simply choose not to change their behavior based on another person's perspective. Conversely, those with low self-esteem are not receptive to the message because they lack the attention and motivation to process the message (Rhodes & Wood, 1993). The mean self-esteem level of the subject pool was relatively high ($M = 1.9697$ - where 1 is high self-esteem and 6 is low self-esteem), and could explain part of the null effect of self esteem and message type on changes in behaviors and intentions to exercise.

The current investigation did not have an adequate sample size ($n = 109$) and a substantial number of the participants were not successfully contacted for the follow-up measure, thus leaving incomplete data ($n = 83$). The number of participants in each condition was relatively low, thus limiting the significance of our statistical analyses. In future research, a larger sample size will be necessary when considering so many variables. Further, the dependant measures could be improved in several ways. First, in the present study, interim exercise was measured by asking the participants to report their actual exercise routine for each week during the two weeks between the initial study and the follow-up. Initial exercise was assessed in terms of one's typical (average) exercise routine, thus making it more susceptible to the potential influence of self-presentational and exercise ideals. Past research has illustrated the importance of the levels of specificity in attitude and behavioral measures when looking for connections between them (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Future research may benefit from bridging that gap. In the current study, the discrepancies in the specificity of our behavioral measures may have compromised our data.

The messages developed for this study could be improved upon. Considering the number of issues involved in motivating individuals to exercise regularly, a stronger message may be necessary. More persuasive messages might address more of the issues at play that frequently keep people from exercising, and might employ a message format more engaging than a brief essay.

Personality traits such as self-esteem have been found to affect message reception, processing, and influenceability and should be further addressed in message framing research. The way in which a message is framed has been found to

influence the effectiveness of the message when promoting health behaviors. However, further research is needed to understand how these individual differences moderate the effect of message framing on persuasion attempts.

Exploratory correlational analyses revealed significant positive correlations between self-efficacy, initial exercise, and positive health beliefs suggesting technical and theoretical limitations to the study. Specifically, individuals who believe in the benefits of exercise, and have high enough personal efficacy to believe that they can attain these results are already exercising. Individuals to whom these factors do not apply may need a more substantial persuasion attempt to motivate them to overcome the numerous barriers to and costs of a regular exercise program. Future research could elucidate these processes to the benefit of many.

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Differential Reinforcement of Narrow - Band Response Durations At Sub Second Duration Levels In Laboratory Rats

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Abstract

Scientists in biology and psychology once held different views about the relative contribution that environment played in an organism's growth and development. This view began to change in biology in the late 1960's with 1) the proposal that environmental ("k") factors, as well as random mutations and rates of regeneration, may play a role in the heritability of species-specific characteristics including behavior, and 2) the finding that phototaxis (a tendency to approach or avoid light) was heritable and could be made to diverge in sub-populations of insects (*Drosophila pseudoobscura*). Psychologists also have noted that operant conditioning as a life history variable was formally, if not physiologically like phylogenetic selection in that consequences of behavior strengthened ("reinforced") some behaviors and weakened ("extinguished") others. The term ontogenic selection has come to be used in this context. The selection of topographies (form) of individual behaviors rather than their sheer rate of occurrence (the "learning curve") has been little investigated in psychology. In the present study, we provide data examining the properties of selective reinforcement on response form as well as response frequency. Two methods of response differentiation which achieve nearly comparable final performances are compared for their utility based on their ease of programming and their effectiveness.

While there has always been a somewhat general agreement among scientists in biology and psychology as to the origin and selection of species they hold quite different views about the contributions that the "behavior plasticity" may make to selection by and for reproduction. Evolutionary biologists themselves appear somewhat divided on the issue. (For a discussion comparing the evolution of behavior and its role in generating new evolutionary events see Futuyma, 1998, Ch.s 19 and 20). The first data showing a way to elucidate the effects of environmental events on the selection of behavior traits appeared in the late 1960's, with a classic series of studies (Dobzhansky & Spassky, 1969) showing that certain behaviors, such as geotaxis and phototaxis, were heritable, could be selected through experimental geographical diffusion, and passed on through artificial breeding. More recent experiments indicate that ontogenic factors may play an even larger role in trait selection than first thought (Losos, Warheit, & Schoener, 1997).

Genetic differences in behavior once thought to be continuous, interrupted only by their recombination through reproduction, are now thought to also be "shaped" by environmental forces. These could include contingencies of reinforcement if the behavior survived as a cultural pattern which, in its turn, had an effect on selective mating. Cultural "shaping" of behavior (through workplace, education, government, etc.) contingencies of reinforcement could change the culture and, in turn, the species. There is little experimental data to help steer the applied behavior analyst who wants to use differential reinforcement to shape behavior for educational and treatment purposes. What we have currently to use

are general principles derived from everyday experience in the school and clinic. We can make some general statements about behavior differentiation and how it works, but we have very few rules to use when we want to systematically control the differentiation process in a systematically proven way. In, short, we know little about what might simplify and/or make more effective the shaping (response differentiation) process.

The present study was designed to add to the small but little we already know about computer automated response differentiation. The results from two experimental groups of rats, each exposed to a different computerized shaping program are analyzed and compared for:

- 1) changes in the central tendency and ranges of durations as differential reinforcement proceeds,
- 2) covariations between average duration, free response rates, and rates of reinforcement across sessions,
- 3) predictability in the course of changes in response duration using a response differentiation index similar to the "heritability" index which is used to predict differential trait changes in experimental genetics.

Once we establish some consistent relationships among these variables we will be assessing them for their role in the prediction and control of transitions from one behavior form and pattern (topography) to another.

METHOD

Subjects

The experiment employed 16 female albino laboratory rats (Holtzmann, Sprague Dawley, Inc.) as subjects. All animals were housed in the Department of Psychology's animal care facility. Animal care was supervised by the Animal Care Committee of the University of Texas at Arlington. The animals in group II were 60 days old at the beginning of the experiment and were maintained at approximately 85% of their *ad libitum* feeding weight throughout the experiment. These animals had no prior experience with the lab or experiments. The animals in group I were from previous experiments and undergraduate classes. These animals did have a prior history of laboratory experience.

Apparatus

The animals were tested in a standard two-bar rat chamber measuring 28 x 29 x 30 cm (Gerbrands Mod. 1111). Interior illumination consisted of a house light and a green side light mounted near the active manipulandum (right bar). Responses were reinforced with 45 mg food pellets (Noyes Formula A). Testing was conducted in a celotex lined fiberboard isolation chest equipped with an interior exhaust fan. A microprocessor was used to control the experiment as well as for data acquisition and storage. A backup record of events was kept on a strip cumulative strip-chart recorder.

Procedure

The animals were magazine trained and shaped to lever press. Ten 30 minute baseline sessions were then run in which the rats were reinforced on a FR1 schedule. The next part of the experiment employed two computerized programs designed to shape behavior into a band of durations lying between 600-700 msec.

For Group I (shaping by central tendency) a procedure much like that used by Lane, (1964) and Kuch (1974) was employed. There were 10 animals in the group. The range of acceptable bar pressing durations was initially set at 100 to 900 msec. The 11th response was reinforced if it fell within the band of durations defined by the mean + the average deviation of these 10 "operant level" responses. The mean of response 11 and the preceding 9 responses plus their average deviation were now computed and a new band-width criterion set, then response 12 plus the preceding 9, and so on. Response durations within the momentary band-width value were, of course, reinforced, durations greater or less than the band were not reinforced. Calibrating the differentiation procedure to the momentary mean and average deviation continued for the duration of each session. At the beginning of each session the bandwidth was set to the value left from the preceding session. This procedure was continued for each animal until the criterion band-width was constant at 600-700 msec for 4 consecutive sessions.

For Group II (shaping by range), a procedure similar to the one devised by Pear & Legris (1987) was used. From an initial 100 to 900 msec band of acceptable durations the program automatically narrowed the upper and lower band by 14 msec after each reinforced response. If the response produced no reinforcement the machine would automatically widen the upper and lower bands by 14 msec. The animals in Group II were run for over 14 hours (2 hours more than the median number of hours typical for the animals in Group I). Again, the beginning criterion values for each session were set at the last values set in the preceding session.

There were five items recorded for each response in both groups: the IRT (inter-response time), the response duration, the consequence (delivery or no delivery of a reinforcing stimulus), the momentary lower criterion band setting, and the momentary upper criterion band setting.

The results for two representative individual subjects are shown in Figs 1 and 2. (The data for each individual subjects in both groups is available by request from the mentor of this paper - see above). All of the animals showed a tendency to emit responses during the final criterion session at a median duration well above their baseline entry level but somewhat short of the midpoint of the final criterion band (650 ± 50 msec). The modal interresponse Times for each session were no greater than 1.5 to 2.5 secs for all animals for all sessions.¹

The animals in Group I (shaping by central tendency) were the only subjects whose IRT distributions showed appreciable numbers of interresponse times below 0.5 sec. These animals tended to be under poor control of the final shaping criterion as illustrated by their median differentiation indices. This was especially true for KC4, KC6, KC8 and R8 (see Fig. 1). The animals in Group II (shaping by

ranges) on the other hand seldom, if ever, emitted responses with IRTs below 0.5 sec and consistently yielded differentiation indices of 45% or above. (Fig. 2)

The animals in both groups showed a parallel decline from the beginning of the experiment in both mean IRT and percent reinforcement. This decline was accompanied by smaller median gains from session to session (40% or less). Reinforcement percentages also trended downward (toward 20-30%) along with downward trends in mean and modal interresponse times (Fig. 1). There was also a trend upward toward the end of shaping (higher percentages of reinforcement and higher mean IRT values) for some of the animals in group I. All of the animals in Group II recovered from the initial decline in percent reinforcement, stabilizing by the 6th hour of testing at about 50%. IRTs decreased and recovered in direct proportion to the decrease and recovery of percent reinforcement, stabilizing at 4-5 sec (Fig. 2).

The fact that the animals in Group I (shaping by central tendency) tended to be under poor control of the final shaping criterion was also illustrated by the fact that the larger median interquartile ranges across sessions were generally associated with lower percentages of reinforcement, higher response rates and lower overall gains in differentiation (smaller median differentiation index values): variability of response duration was associated with less effective shaping.

DISCUSSION

Differentiation proceeded as it should have, given earlier research findings. The obtained results paralleled what would have been predicted from a comparison of the similarities of behavior differentiation in experimental psychology (ontogenic selection) and trait differentiation in experimental biology (phylogenetic selection). The physical properties of a single organism's responses and their distributions (rate, duration, force, spatial extensity or locus) were found to be quite easily altered to fit an arbitrary criterion. They could be reliably "shaped" by arranging new reinforcement contingencies and programming a computer to manage differential reinforcement. To capture the functional similarity between phylogenetic and what we are calling ontogenic selection, we propose an index much like the index of heritability used in experimental genetics (Futuyma, 1998). We have chosen the term "index of differentiability" in the present context, meaning the magnitude of changes toward the differentiation criterion observed as differential reinforcement proceeded. In the present case, the median index of differentiability tended to be higher for animals with a tendency to pause longer between responses

From the standpoint of earlier behavioral research it is noteworthy that median response durations for all animals ultimately were near, albeit slightly short of, the desired bandwidth. More importantly, this accordance between final performance and criterion was seen at bandwidths in the millisecond range: a precision not put to the test in previous response differentiation experiments. As Galbicka (1988) points out, differentiation algorithms of the sort applied in the

present experiment have only been possible with the development of relatively inexpensive computers and the standardization of control software.

Of the two algorithms tested, shaping was equally effective for each if the final median durations for each animal in each group are compared to the criterion median duration (Table I). The range algorithm was superior to the central tendency algorithm by all other measures (differentiation indices, overall response rates, overall reinforcement frequencies and time-to-stabilization of reinforcement frequencies).

A shaping algorithm based upon percentile ranks has been tested and found to have some advantages for shaping (Platt, 1979; Galbicka, 1988). It was not possible, given constraints of time and resources, to include that algorithm in the present experiment. A comparison is planned making that comparison as the next in a series of experiments. The results of such a comparison should make clearer what is needed to understand the predictability in the course of changes in response differentiation.

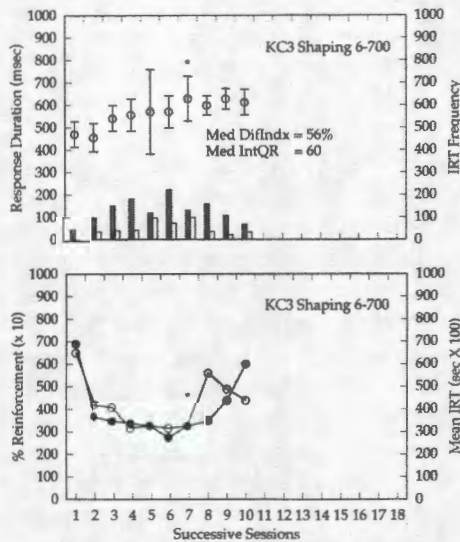


Figure 1 The top panels show the median durations (unfilled circles), inter-quartile ranges (vertical capped lines), and interresponse time distributions across successive one hour sessions for animal KC8 in Group I (shaping by central tendency). Interresponse times of 0-0.5 sec are represented by black bars, 0.5 to 1.5 sec by grey bars, and 1.5 to 2.5 sec by white bars. Asterisks indicate the first session in which the criterion band closed to 6-700 msec for the first of four consecutive sessions. Median differentiation indices (MedDif) in percent were calculated by the formula given in Appendix 1. Median interquartile ranges (Med IntQR) are in msec. The bottom panels show % reinforcement (unfilled circles) and mean interresponse times (blackened circles) across sessions for the same animal.

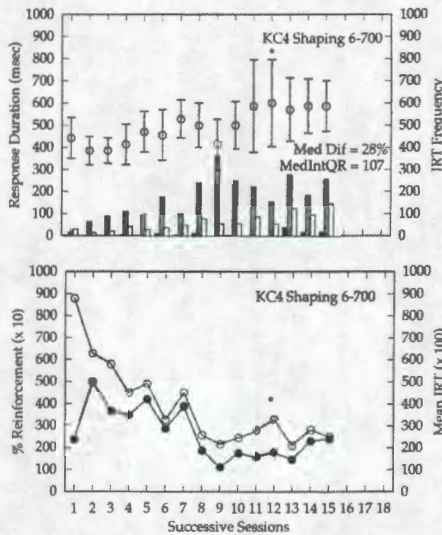


Figure 2 The top panels show the median durations (unfilled circles), inter-quartile ranges (vertical capped lines), and interresponse time distributions across successive 30-minute sessions for B3 in Group II (shaping by range). Interresponse times of 0-0.5 sec are represented by black bars, 0.5 to 1.5 by grey bars, and 1.5 to 2.5 sec by white bars. Median differentiation indices (Med Dif) in percent were calculated by the formula given in Appendix 1. Median interquartile ranges (Med IntQR) are in msec. The bottom panel shows % reinforcement (unfilled circles) and mean interresponse times (blackened circles) across successive 30 minute sessions for the same animal.

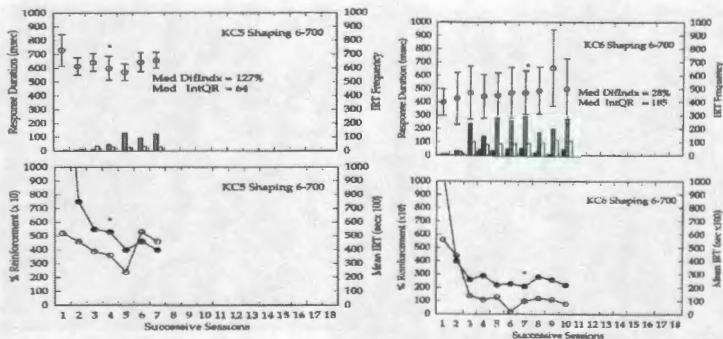


Figure 3

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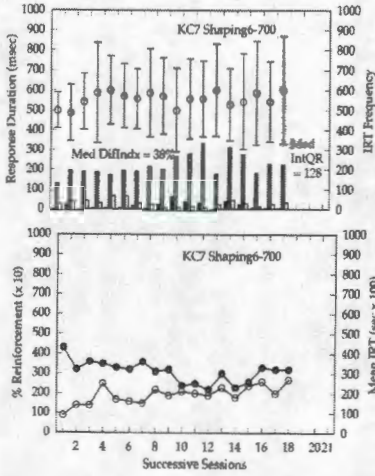


Figure 6

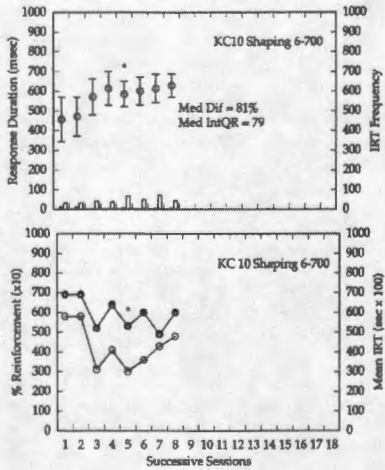
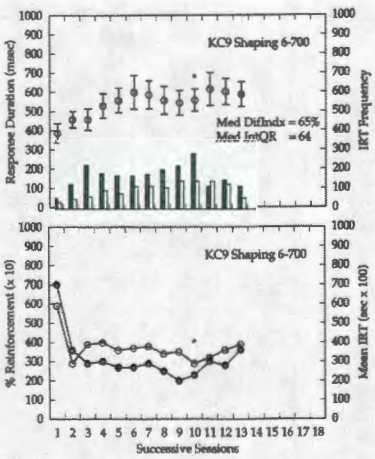
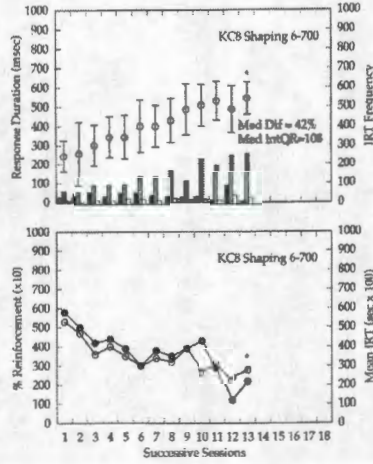


Figure 7

Figure 8

Figure 9

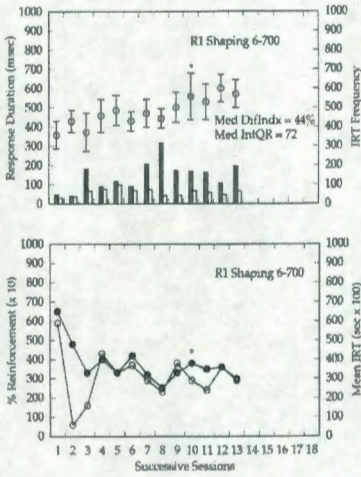


Figure 10

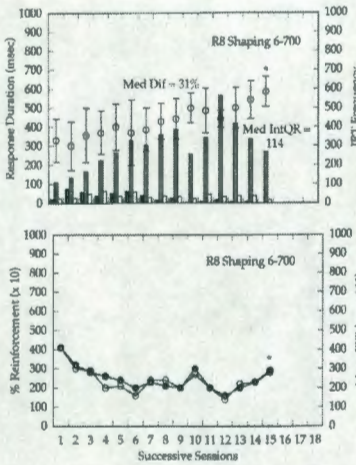
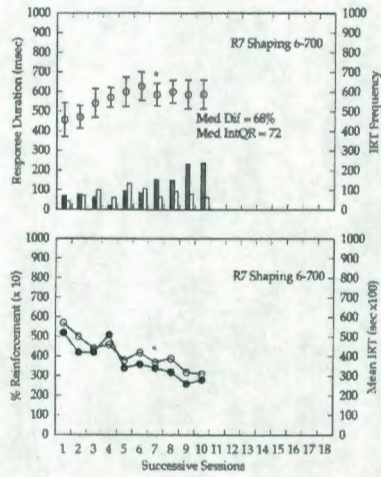


Figure 11

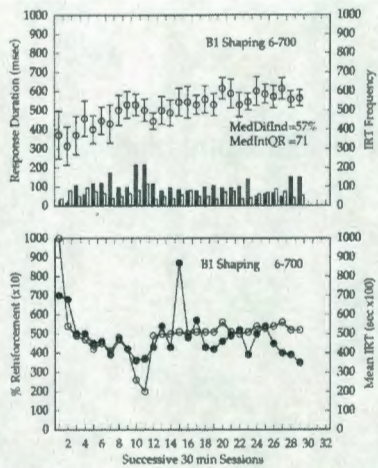


Figure 12

Figure 13

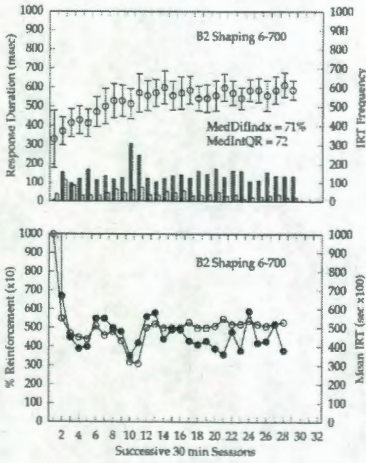


Figure 14

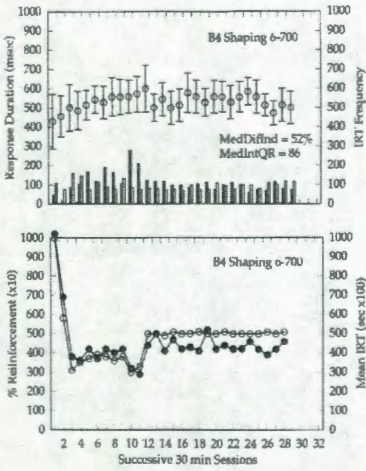
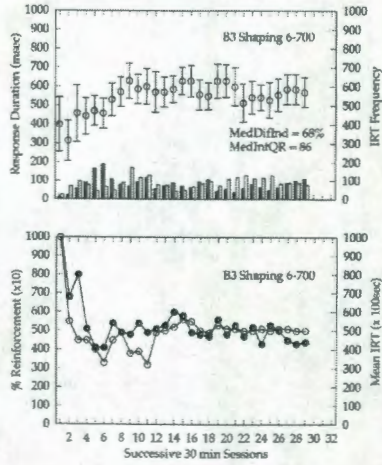


Figure 15

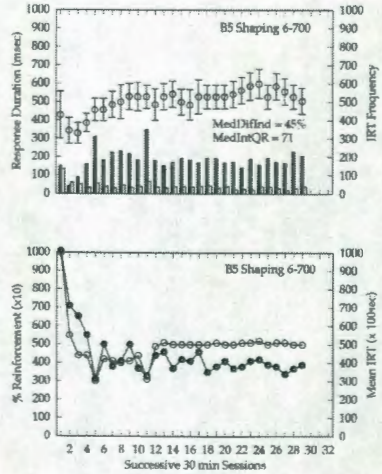


Figure 16

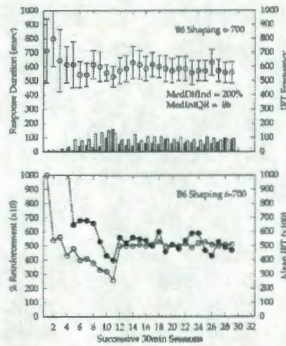


Figure 17

Using a response differentiation or “differentiability” index to predict differential behavior changes in response form could add to our knowledge of the shaping process. This should make it possible in the future to use computer algorithms to shape simple behavior for purposes of training finely differentiated performances (job skills, remediation in speech and physical therapy). Experiments like the one reported here should tell us more about the advantages (or disadvantages) of moving in small steps with frequent reinforcement, of using range or central tendency measures, of using methods to control rate during shaping and, perhaps to minimize the tendency for shaping to get worse before it gets better, as seen in the present experiment. It is quite possible that the lessons learned in experiments of the sort noted here could be providing for the first time a shaping technology that could be used to design computer-controlled differentiation across response classes in a variety of skill training environments.

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Notes

¹ Statistical computation for concluding the differentiability index.

$$MED\ DIF\ Indx\ (\%) = \frac{Md\ N - Md\ OL}{650 - MdOL} \times 100$$

Where MdN stands for the median duration for session N, MdOL the median for operant level, and 650 is the criterion duration.

Figures

Effects Of Brainstorming Pleasant Or Unpleasant Words On A Delayed Free Recall Task

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Abstract

This study investigated the effects of brainstorming pleasant or unpleasant words on recall. A brainstorming task - The Thumbs Problem, an interpolated task, and a delayed free recall task, were used. Eight Interactive groups and fifteen (15) individuals generated pleasant and unpleasant words using standard brainstorming procedures. A scribe wrote all the words as they were spoken. We wanted to determine the effects of brainstorming pleasant or unpleasant words on the total number of words generated, whether brainstorming alone or in a group had any effect on recall, and whether the role of a subject (participant or scribe) had any effect on the percentage correctly recalled. On word generation, results indicated that individuals generated more total number of words, (both pleasant and unpleasant) and also more unique words. On recall, results indicated that role (scribe vs. participant) had no effect. On the percentage recalled, results indicated that a higher percentage of pleasant words were recalled, individuals brainstormers recalled a higher percentage of the words generated, and participants (those who generated the words) had a higher percentage of recall than the scribes, who did not generate.

Small groups of people perform different problem solving tasks often with the belief that the more people involved in performing a task, the higher the productivity level. Some of the groups may be highly structured (e.g. in organizations) or more informal (e.g., a group of friends). Some of the tasks may call for either pleasant or unpleasant ideas. For example, a group of high school friends may discuss the best way to inform adults of a friend's drug problem. A group of co-workers may discuss how to spend money they have won in a lottery. During the discussion one member of the group may take notes. When ideas are thus documented, members of the group do not have the need to recall what was discussed. Asking participants of such a group to recall what they discuss in a brainstorming session can illustrate the cognitive processes involved in encoding and recall. Will the person who writes (but does not generate any ideas) have a better recall, or does the emotional content of words have any effect on recall?

Small group interactions have been a topic of central concern in social psychology and organizational psychology for more than fifty (50) years (Davis & Harless, 1996). Social and organizational psychologists study these interactions because they are interested in how individuals think and act in a group and because they are interested in raising individual and group productivity levels in organizations. Brainstorming has been promoted as a technique that is useful for organizations in generating new ideas or perspectives (literature cited in Paulus, 1995).

Literature Review

Brainstorming, as Osborn (1957) envisioned it, involves the generation of

ideas in a group with emphasis on generating as many ideas as possible. Brainstormers are provided with four guidelines: They are instructed not to be critical of ideas, state any ideas that come to mind no matter how wild, aim for a large quantity of ideas, and build on the ideas of others. Osborn (1957) expected that these rules would lead to the generation of a large number of ideas and would also stimulate the generation of high quality ideas as well.

Contrary to conventional wisdom, controlled studies (e.g. Diehl and Stroebe, 1987; Mullen et al., 1991; Paulus, Larey, and Ortega, 1995) have found that brainstorming in groups leads to lower productivity in comparison with the combined productivity of a similar number of individuals brainstorming in isolation (known as a nominal group). Some studies have shown that in many cases interactive brainstorming groups may generate only half as many ideas as the total ideas of a comparable number of individuals working alone.

Brainstorming research has attributed such production losses to four main factors: evaluation apprehension, free riding, blocking, and matching. Diehl and Stroebe (1987) suggested that evaluation apprehension and free riding suggests that group contexts will depress performance because of emotional and motivational factors. Subjects may feel anxious being evaluated by group members, or may feel that their efforts are dispensable or not needed for group success (Kerr and Bruun, 1983).

The four factors of free riding, evaluation apprehension, blocking, and matching have jointly been implicated in group productivity loss (Camacho & Paulus, 1995; Paulus & Dzindolet, 1993; Brown and Paulus, 1996). According to Brown and Paulus (1996) :

Social loafing, (free riding), evaluation apprehension, and blocking may initially lower the rate of production of ideas for the group as a whole, and then, with the rate lower than it would have been, the matching processes kick in to maintain the low rate.

Brown and Paulus (1996) have suggested behavioral and cognitive interference (which is a result of people attempting to communicate simultaneously) appears to account for at least part of the production deficit exhibited in a group. It is difficult to pay attention to what another person is saying while at the same time trying to come up with an idea. Brown and Paulus (1996) suggested that exposure very different from other group members could have an "inhibitory effect on one's line of thought". This interference was what Diehl and Stroebe (1991) called "production blocking" or simply "blocking".

Numerous brainstorming studies (e.g., Diehl and Stroebe, 1987; Paulus and Dzindolet, 1993) performed in laboratories find that group brainstormers produce fewer ideas than individual brainstormers. Some researchers have felt that this should not always be the case. Brown, Tumeo, Larey, and Paulus (1998) presented a model of the cognitive factors involved in group idea generation. According to their model, group brainstorming could be superior to that of individuals under certain social or cognitive conditions.

On word generation, our hypotheses were that singles brainstorming alone would generate the greatest number of words and also the greatest number of unique words. We expected members of the interactive group to generate the most unpleasant words, and the single brainstormers to generate the most pleasant words.

Overview

The human memory system can be divided into three main phases - encoding, storage, and retrieval. Encoding is the formation, or acquisition of the memory trace or putting information into memory. Storage refers to holding or retention of the encoded information while not being used. Retrieval refers to the regeneration and use of the information at the end of the retention interval (Hintzman, 1978). Failure to encode, store or retrieve is what causes us not to "remember" something. Memory researchers can study any of these aspects of memory in well- controlled studies.

Encoding into memory certain aspects of life presents no problem. For example we are able to tell our co-workers what we had for breakfast, although we made no effort to commit the information to memory. At the same time, we might have problems remembering chemical formulas in a chemistry quiz although we may have attempted to commit them to memory. Some of the factors involved in encoding are the level of **arousal** (psychological, or physiological), **intentional or incidental learning, chunking** (the ability to integrate several encodings into one) and the level of processing.

Hyde and Jenkins' (1969) experiment illustrated the importance of encoding on recall. They gave various "orienting" instructions to their subjects who were read a 24-word list at a rate of one every two (2) seconds, and then were asked to recall the words in a free-recall task. There were seven groups of subjects, each receiving different instructions prior to the presentation of the list. The recall group was given intentional-learning instructions - that is, they were told they would be asked to recall the words after the presentation. Three of the groups were not told they would have to recall the words, but were instead given "orienting tasks" not requiring the retention of the words. One group rated each word as it was read on the "pleasant-unpleasant" dimension, the second group indicated whether or not the word contained an "E", and the third estimated the number of letters in the word. The three remaining groups were given mixed intentional and incidental instructions. They were required to perform one of the three orienting tasks, but in addition were told they would have to recall the words.

Recall percentages for all seven groups indicated that, first, learning was as effective when words were rated on the pleasantness scale as when subjects were told to learn the words. Second, the orienting tasks like estimating the number of letters and detecting the E's produce poor learning of the words, and, finally, that combining intentional learning instructions with the orienting tasks interfered with learning. The greatest implication of this experiment was, however, that

"the intention to learn per se, is not particularly important in en-

coding, but that what is important is attending to the material and thinking about it in a particular way" (Hintzman, 1978, p.286).

A dimension like pleasantness and unpleasantness rating requires subjects to think about the meaning of the word, hence encouraging deeper processing and elaboration. The Hyde and Jenkins (1969) study illustrate how information can be encoded in memory in qualitatively different ways, and that the form of encoding affects performance differently.

Previous research indicates that memory for self-generated verbal items is superior to memory for those same verbal items if only read aloud by subjects (Pring and Mulkern, 1992). The aim of our study was, first, to let participants generate their own words by speaking them aloud, following basic brainstorming procedures. Then have a scribe write down the words in the order in which they were spoken. Word generation has been found to improve delayed free recall (Schweickert, McDaniel, & Riegler, 1994). By asking subjects to generate pleasant or unpleasant words, we wanted to encourage enriched and elaborate encoding which has been found to improve memory performance in past research.

The Delayed Free Recall Task

In a free recall task participants recall previously learned items in any order. The free recall task was introduced to memory research by E. A. Kirkpatrick (1894, cited in Hintzman, 1978) when he published "An experimental Study of Memory". In Kirkpatrick's free-recall task, school pupils ranging from primary to college age were tested in the classroom, in three conditions. In one condition, a list of words was written on the blackboard, one at a time, then erased after a brief exposure. In the second condition, the same number of words was read aloud to the class. In the third condition, actual objects were shown to the class instead of words. In each condition, the subject's task was to write down as many of the stimulus items as he could remember in any order he wished. Kirkpatrick (1894) found that subjects remembered objects much better, but that it made no difference whether the mode of presentation of words was visual or auditory. The task Kirkpatrick designed is called free recall because the subject is free to recall the items in any order he wishes.

Hintzman (1978) mentions three general facts about free recall: first, like serial learning, it has a characteristic serial-position curve. Free recall data obtained by Deese & Kaufman's (1957) experiment illustrated three effects: the recency effect (last items on the list are recalled best of all), the primacy effect (items near the beginning of the list recalled second best), and a flat section (asymptote) showing that the recall of items in the middle of the list is not much affected by the serial position.

The other general fact is that although there are no restrictions on recall order, the actual order in which items are recalled shows some structure. Bousfield (1953) first demonstrated this fact. He presented his subjects with a list of sixty (60) nouns that fell into four (4) different categories in random order. He found that

subjects tended to recall items from the same categories together - a phenomenon he called clustering. Tulving (1962) demonstrated this in a multi-free-recall experiment - that is one in which the same list is presented more than once. Tulving presented a 16-word list to subjects sixteen (16) times, each time with the words arranged in a new order. After each trial the subjects were given a written free recall test. Tulving found that the order in which a given subject wrote down the words on one trial tended to be related to the order in which he wrote them down on the last. This happened even when the words were supposedly "unrelated", and the presentation order changed randomly from one trial to the next. Subjects impose on the recall a consistent order of their own.

The third general fact about free recall is that, ordinarily, it does not exhaust the subject's memory of the list of items. Recognition tests and cued recall tests have often been found to aid recall where free recall has failed.

Raaijmakers and Shiffrin (1980, 1981) developed SAMS (Search of Associative Memory) to deal with the paradigms of free recall and free recall with added cues. In free recall, a list of n words is presented in random order at a rate of t sec per word. Both t and n may be varied between lists. In immediate recall, the subject is asked to recall as many words as possible, in any order, immediately following list presentation. In this case, the most recently presented words are recalled at an enhanced level (the recency effect), presumably reflecting the presence of those words in a short-term store. In a delayed free-recall task, an interpolated task, usually arithmetic, is interposed between presentation and recall. The interpolated task is meant to clear short-term memory of the list of words so that all the recall is from the long-term memory. According to Raaijmakers and Shiffrin the short-term memory is limited in capacity so that only a limited number of times may be retained, rehearsed, and coded.

Research on recall task has illustrated that storage is crucially dependent on the nature of the effortful encoding and rehearsal processes carried out (or not carried out) by the subject at and shortly after presentation. According to Shiffrin (1975) what gets stored is what is encoded and rehearsed.

In the current study the delayed free-recall task was given to determine whether individuals brainstorming alone would have better recall than those brainstorming in interactive groups, if scribes would have the second best recall, and if the members of the group would have the lowest level of recall. We also expected unpleasant words to be recalled the best.

Linking Brainstorming With a Delayed Free-Recall Task

No published studies we presently know of have investigated brainstorming of pleasant or unpleasant words or ideas. Usually brainstormers are required to say anything that comes to mind, without regard to its being pleasant or unpleasant. Research in brainstorming is typically undertaken by social or organizational psychologists. Memory research (involving tasks like the delayed recall task in this study) is usually in the realm of cognitive psychology. We decided to conduct this

study because we wanted to determine whether generating words in a brainstorming session could significantly affect delayed recall. Generally brainstorming sessions are either audio or video-taped so participants usually have no need to recall what ideas they or other people contributed. Instead of video or audio-taping, a scribe who wrote words as they were spoken recorded our participant's ideas. We also asked our subjects (both participants and scribes) to perform the delayed free recall task to determine whether the scribe who used both his audio and motor skills would have higher recall than the participant who merely generated the words. Some research (Nako and Naoi, 1995) suggests that processing words in different modalities can improve recall. We hypothesized that the scribes in both the singles and group condition would recall the highest number of words, followed by the single brainstormers, with the members of the interactive groups recalling the least number of words .

METHOD

Participants

Participants were sixty-two (62) male and female students enrolled in either an upper level psychology course, or introduction to psychology. Thirty (30) subjects brainstormed as pairs, (fifteen (15) participants and fifteen (15) scribes) and thirty-two (32) brainstormed as members of eight (8) groups. All participants were members of an intact class and received extra credit for their participation. Subjects were randomly assigned the role of participant or scribe, and to work either as a pair or as a part of an interactive group of four. Each group had a scribe and three participants, and the pair consisted of a participant and a scribe. All the participants took part in the three tasks, and all their data was used for analyses, except for one participant who was not proficient in English.

Design

Design was a 2 (Group vs. Individual) X 2 (pleasant versus unpleasant) X 2 (scribe versus participant) factorial design. Three independent variables were manipulated: group type - group or individuals, words classification - pleasant or unpleasant, and role, with either scribe or participant. The dependent variables were the total number of unique words generated, and percentage recalled correctly. The experiment involved three tasks. In the first task, subjects brainstormed in interactive groups or as individuals on the Thumbs Problem. In the second task, they performed an arithmetic (interpolated) task, and finally the critical delayed free recall task.

Procedure

The experiments were conducted in two sessions, a week apart. During each session an experimenter explained to the participants the meaning and purpose of brainstorming:

Brainstorming is a form of group interaction used to facilitate the flow of ideas. It is widely used in a number of corporations and is generally used when new, unique, original or creative ideas are desired. It is not used to solve everyday problems.

The experimenter then read the following brainstorming rules:

1. Criticism is ruled out. Adverse judgment of ideas must be withheld. Say everything you think of.
2. Freewheeling is welcome. The wilder the idea the better.
3. Quantity is wanted. The greater the number of ideas, the more likelihood for a winner. Come up with as many ideas as you can.
4. Combination and improvement is sought: when you think of any idea, think of ways to join or change it. Build on other people's ideas.

After instructions were read, participants were randomly assigned to either an interactive groups of five (5) (four (4) participants, and one (1) scribe) or a pair (one (1) participant and a scribe). Subjects were then assigned roles as either participants or scribes. The experimenters escorted the members of the interactive groups to different rooms to begin their brainstorming session. The pairs remained in the lecture hall to begin their brainstorming session.

In their respective rooms, both the pairs, and the interactive groups were provided with instructions. Half the subjects brainstormed on pleasant words and the other half brainstormed on unpleasant words. Separate instructions were provided for the scribes and for the participants. Scribes were instructed to write the generated words in the order they heard them. They were asked not to contribute to the brainstorming in any way. Participants were again instructed on standard brainstorming procedures. Fifteen minutes were allowed for brainstorming on the Thumbs Problem.

After the brainstorming session, the interactive groups returned to the lecture room to join the nominal groups. They were instructed not to discuss the brainstorming with anyone in the hallway. In the lecture hall all subjects were given an interpolating arithmetic task (subtracting the number seven (7) from a three-digit number) for five (5) minutes. After this task, each participant was provided with a plain sheet of paper with instructions asking them to recall as many words as possible from the session in which they had just participated. The free-recall task was performed for ten (10) minutes. Some participants were allowed extra time to recall as many words as possible in order to exhaust their memory.

The generated words (as per the scribe's record) for both the single brainstormers and for each interactive group were counted. After repetitions were subtracted, this became the **total number of words generated**. Then pleasant and unpleasant words were counted. To compare the lone brainstormers' generation with the interactive groups, we made nominal groups of the lone brainstormers, found the average, and compared this to the interactive group average.

For the recall data, the **total number of words correctly recalled** by each

subject were tabulated by taking the list of each subject's recall and comparing it with the total number of words generated. In case of the single brainstormer, it was his own generated words. In the case of the member of the interactive group, it was for the total number of words generated by the whole group. Words that did not appear in the generation list were eliminated as errors. After errors were eliminated, each subject had his or her own **total number of words correctly recalled**.

To compare the total number of words correctly recalled by singles and the interactive groups, random groups of singles were formed into nominal groups. The average of these nominal groups was compared to the average recalls of subjects who had brainstormed as members of an interactive group, but who did their recalls as lone individuals.

Results

Words Generated in The Brainstorming Session

A significant difference was found between the total number of ideas generated by individuals and the mean total number of ideas generated by participants in interactive groups. A two-way ANOVA revealed a highly significant main effect of group on items generated ($F(1,24) = 31.18, p < .0001$). The total number of words generated by individuals ($M = 73.28$) was significantly higher than the total number of words generated by group participants ($M = 34.59$). No other effects were significant.

The total number of unique words generated was found to be significantly different for nominal groups (individual brainstormers made into a group) and the interactive groups. A two-way ANOVA revealed a significant main effect of group ($F(1,12) = 22.17, p < .001$). The total number of unique words generated by the nominal groups ($M = 65.09$) was a significantly higher than the number of unique words generated by the interactive groups ($M = 34.59$).

Total Number of Words Correctly Recalled

A three-way ANOVA revealed an interaction of emotional tone (pleasant v. unpleasant) by role (participant v. scribe) ($F(1,23) = 10.26, p < .01$). As Table 1 illustrates, participants recalled more unpleasant words than scribes but recalled fewer pleasant words than scribes. (Note: this measure does not allow for the different number of items generated by each participant or group)

The triple interaction of emotional tone by role by social grouping was significant $F(1,24)=7.71, p=.01$. In general, the trend for the two-way interaction shown above held for all groups except for the singles who, for pleasant words, showed slightly higher recall than the scribes.

Percent recall

Recall was expressed for each participant as a percent of the items generated. A three-way ANOVA revealed the three main effects to be significant - for

emotional tone (pleasant v. unpleasant words), for role (individual v. scribe) and for social group (singles v. group members). For emotional tone ($F(1,24) = 4.17, p=.05$), the percentage of pleasant words recalled correctly (43.85%) was significantly higher than that for unpleasant words (36.08%). For role ($F(1,24)=4.26, p<.05$), participants recalled a higher percentage (42.58%) of words than scribes (37.36%). For social group ($F(1,24) = 10.51, p=.003$), singles recalled more (46.12%) than members of interactive groups (33.81%).

Discussion

The results indicated members of the interactive groups generated about half as many words as the lone brainstormers. This is consistent with findings in the brainstorming literature (e.g., Paulus, Larey, and Ortega, 1995; Brown & Paulus, 1996). The number of unique words generated by individuals was also significantly higher than the number of unique words generated by the members of the interactive groups. This is also consistent with most published brainstorming research findings.

With regard to recall, we had hypothesized that the scribe whose role was to listen and then write the words as they were spoken, would have better recall than participants because of using two modalities - hearing and writing. It was hypothesized that writing should have improved recall. We had assumed that the writing of the words could have been like a form of rehearsal. The fact that the recall was also in writing might also have improved the scribes' memory. To investigate the role of response modality, a new study could compare scribe recall when written or when given orally. However, individual participants had a higher percentage of recall than scribes.

The most powerful factor that may have contributed to the recall findings may have been based on the generation effect and on the nature of associative generation. It was found that the participants' recall was better than the scribe's. This difference may have occurred primarily because the participants generated the items themselves while the scribes did not. Further, the single participants generated all the items while the group members generated only a portion of the total. Thus the singles would be expected to have better recall than group members on this basis alone. Similarly, blocking in groups would have interfered with the members' associations and categories being utilized, further interfering with encoding and later recall by group members compared with singles.

A final difference may be that the singles may be likely to recall the generated items in sequence because the sequence was consistent with the way they had generated the words. Group members on the other may have had more interference because they had to recall different words generated by four different people.

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Table 1.
Mean number of words correctly recalled

	Participants	Scribes
Pleasant words	33.08	35.27
Unpleasant words	36.97	31.09

Level of Processing Effects in Implicit Memory Tests

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Abstract

On implicit memory tests, people are unaware of retrieving memories of events from the past. Past research has attributed performance on implicit tests to a perceptual memory system because levels of processing (LOP) manipulations (i.e., study words for their meaning vs. for their surface characteristics) had no effect on performance. But, more recently, LOP effects have been observed in implicit tests. In the experiment reported here, LOP was manipulated at study and the implicit memory test was stem completion, a test in which the first three letters of words are presented and subjects say the first word that comes to mind. In addition, the frequency of alternative solutions was manipulated. LOP effect did not increase as the frequency of alternative solutions decreased, which indicates that both frequency and the number of alternative solutions were important elements in competing with targets for subjects responses. This finding supports the idea that lexical, in addition to perceptual, memory underlies performance on implicit tests.

Much evidence points to substantial differences between implicit and explicit memory tests (Richardson-Klavehn & Bjork, 1988). Implicit memory is measured by tests on which subjects do not consciously recall their prior experiences to the items. In contrast, explicit memory tests, such as recall and recognition, require subjects to remember the prior information or experiences at the time of the test. Schacter (1987) believed the distinction between explicit implicit memory is similar to the distinctions between memory with awareness and memory without awareness, declarative memory versus non-declarative, and direct as opposed to indirect memory.

Schacter and Graf (1985) described three differences between implicit and explicit memory. First, performance on both tasks is affected differently by a variety of experimental manipulations. Secondly, performance on tests of implicit retention can be statistically independent of recognition performance. Third, patients with organic amnesia, who are impaired on explicit memory tests, are less impaired and frequently normal on various implicit tests.

Interest has been sparked in implicit memory because of remarkable findings reported by researchers interested in the neuropsychology of memory. Certain forms of brain damage can cause forgetting while not affecting other functions, such as perceptual abilities, language, and intelligence. This type of brain damage is called amnesic syndrome. These patients are amnesic because their brain damage leaves them unable to retain new experiences but leaves other functions intact. Also, these patients show normal levels of implicit memory but tend to perform poorly on explicit memory tests. Researchers became interested in discovering why amnesic patients show normal levels of implicit memory, but tend to perform poorly on explicit tests. Warrington and Weiskrantz (1968) performed an experiment on four amnesic patients and a control group of sixteen people. Subjects were presented a list of words to remember. In the free-recall test, subjects were given a

sheet of paper and asked to recall as many of the recently presented words as possible. In the recognition task, studied words were mixed with new words and subjects were asked to indicate which ones had been studied. Both the free-recall and recognition task involve explicit memory. In the implicit test, subjects were asked to say the first word that came to mind that completes the stem. The control subjects outperformed the amnesic patients on the explicit test (free-recall and recognition). The real surprise was that amnesic patients performed just as well as the control subjects on the implicit tests. Many researchers, such as Jacoby (as cited in Roediger, 1990), believed that implicit memory was perceptual. He explored the generation effect, in which he manipulated the conditions in which subjects studied words prior to receiving one of the two tests. The manipulation involved whether or not subjects read aloud a single word (e.g., cold) out of context (xxx-cold), read it in a meaningful context (hot-cold), or generated it from the context (hot-???). Target words were antonyms of the context words. Following the study task, subjects took either a recognition test or a perceptual identification test. In the perceptual identification test, subjects were shown the same words as on the recognition test, but at a very fast rate. Their task was to read each word aloud. The measure of interest was priming, or the greater ability to name words during the test if they had been studied earlier in the experiment. The results for the recognition test were that generated words were recognized better than those read in context, which in turn were recognized better than those read out of context. On the other hand, exactly the opposite results occurred in the perceptual identification test. The greatest priming occurred for words read out of context and the least for words that were generated. These results lead to the conclusion that implicit memory is perceptual.

Another experiment was conducted by Weldon and Roediger (as cited in Roediger, 1990) to determine whether implicit memory is perceptual. In this experiment, students studied a list of pictures and words. The pictures were line drawings that represented easily named objects. The presented words were concrete words (things that can be seen). Following the study task, one group of subjects was given a free recall test, in which the subjects attempted to recall the names of the presented drawings and words. Another group of subjects was given a word-fragment completion test, in which subjects tried to produce words from fragments such as s_r_wb_r_. Some fragments corresponded to the presented words or pictures, and some did not. On the explicit free-recall test, pictures were remembered better than words. However, on the word-fragment completion test, prior study of words produced greater priming than did study of pictures. This experiment confirmed the idea that implicit tests rely heavily on perceptual operations.

In contrast, Brown and Mitchell (1994; see Weldon, 1991) argued that perceptual memory is not the only memory system that contributes to priming. They reviewed a large number of experiments in order to determine whether semantic processing has an advantage over non-semantic processing on implicit tests. This is important because perceptual memory is not influenced by studying words for their meaning, which indicates that perceptual memory is not the only system that

contributes to priming. A review of 166 outcomes concluded that priming was greater following semantic processing (studying words for their meaning) than non-semantic processing (studying words for their surface characteristics). This difference was found in both perceptual and conceptual implicit memory tests, as well as between and within subject designs.

For example, Challis and Brodbeck (1992) found that a LOP manipulation affects priming in a perceptual implicit test known as word-fragment completion. A LOP manipulation can be either deep, which is studying words for their meaning, or it can be shallow, which is studying words for their physical characteristics. In the semantic condition, subjects rated each item in terms of their pleasantness. In the non-semantic condition, subjects counted ascending and descending letters, or counted letters with enclosed spaces. Then, an implicit word-fragment completion test was administered. The results were that priming was greater in the semantic condition than in the non-semantic condition. Challis and Brodbeck continued with several experiments to determine if LOP affects priming in implicit memory tests. In the end, they concluded that when semantic and physical study conditions were manipulated between subjects or within subjects in a blocked fashion, significant LOP effects were obtained in word-fragment completion. But, when semantic and physical conditions were manipulated within subjects in a mixed list, the LOP effect was small and non-significant.

From this result, Challis and Brodbeck (1992) argued that lexical and perceptual systems contribute to memory on implicit tests. Also, they believed that if a shallow orienting task in a LOP manipulation discourages lexical processing, then less priming should occur in such implicit tests. Marsolek, Kosslyn, and Squire (1992) conducted an experiment that suggested that two separate systems appear to be used to encode the visual forms of words. One system represents form-specific information and another represents abstract form information. Form-specific representations preserve specific characteristics of the patterns of lines themselves. Thus, a form specific system would produce different output representations when a particular word is presented as input in different fonts and letter cases. Abstract representations specify the identity of words and how they are arranged. An abstract representation system would produce the same output representations for a word when it is presented in different fonts and letter cases. Also, this experiment was designed to investigate whether these two types of representations are computed in distinct brain systems, with the system that encodes form-specific representations being more effective in the right cerebral hemisphere.

Their experiment began with subjects indicating whether they liked or disliked words that were presented one at a time. One set of words was presented auditorily, and one set was presented visually. After this initial phase, word stems were presented briefly in the left or right visual fields. Subjects were asked to read the word stems and to report the first word that came to mind that completed the stem. Marsolek, Kosslyn, and Squire assessed within-modality priming by measuring the number of stems that were completed with words that were seen in the

initial phase. Also, they assessed cross-modality priming by measuring the number of stems that were completed with words that were heard in the initial phase. The visually presented words, and all the word stems, were always in the same font and letter case. So, if a form-specific representation is more effective in the right hemisphere, then within-modality priming should be greater than cross-modality priming word stems that appear in the left visual field.

The results of Marsolek, Kosslyn, and Squire were that when word stems were presented to the right hemisphere, there was more within-modality priming than cross-modality priming. In contrast, when word stems were presented to the left hemisphere, within-modality and cross-modality priming did not differ. This result supported the idea that perceptual and lexical systems contribute to memory on implicit tests.

Work by Barnhardt (in preparation) has also supported the idea that perceptual and lexical systems contribute to memory on implicit tests. In his experiment, Barnhardt evaluated how the number of alternative solutions and their frequency influence LOP and priming in stem completion tests. When stems with many alternative solutions are used, a very small LOP effect was obtained. The reason for this is that the competition from other words is very high, due both to the large number of words to choose from and the high frequency of these alternative solutions. In an experiment that uses stems with few alternative solutions, there is a large LOP effect. Most of the LOP effect in few solutions is due to these target words with low frequency alternative solutions. Both of these findings support the idea that lexical, in addition to perceptual, memory supports performance on implicit tests. However, it is unclear whether this large LOP effect in few solutions was due to the small number of solutions, the low frequency of the alternatives, or both. In the present experiment, LOP and the frequency of the alternative solutions for a word, when the stems had seven solutions rather than many or few solutions, were manipulated. In the study task, subjects decided if the meaning of a word was pleasant or unpleasant/neutral. Here, subjects used deep LOP. Then, subjects used shallow LOP to count the number of enclosed spaces that a word had. Next, a stem completion test was conducted.

One possibility is that the LOP effect and priming will increase as the frequency of the alternative solutions decrease. This is the result that Barnhardt has observed in previous research with stems that have two to four solutions. If this occurs in stems with seven solutions, it would indicate that frequency of alternatives, and not number of alternatives, is the important element in competing with targets for subject responses. If this does not occur, it would indicate that both frequency and the number of alternative solutions were important elements in the large LOP effect in few solutions observed by Barnhardt (in preparation).

Before turning to the experiment itself, one popular alternative explanation for LOP effects in implicit tests should be discussed. Many researchers have argued that those results were due to explicit contamination or, in other words, due to the influence of episodic memory (Rajaram and Neely, 1992). Several proce-

dures were used to detect or minimize explicit memory contaminations. First, we used a response deadline. An oral stem completion test was used, and subjects were given a limited time in which to respond. Second, stems from studied words comprised a small proportion of the total number of stems presented in the stem completion test. Third, a post-test questionnaire was administered. On the basis of their questionnaire responses, subjects were classified as "unaware" if they were not aware of using studied words during the stem completion test, "aware" if they became aware of using studied words but continued to use the first word that came to mind, and "intentionally retrieving" if they tried to use studied words. Therefore, awareness has a huge impact on an increase in priming.

Methods

Participants

Twenty-four (24) male and female undergraduate students, all native English speakers, participated in the experiment.

Design

There were two within subject variables: Study, which has three levels (Deep, Shallow, and Baseline), and Frequency, which has two levels (High and Low). There were two dependent variables: the LOP effect (Deep - Shallow) and the Priming effect (Deep + Shallow / 2 - Baseline).

Materials

Seventy-two (72) words served as the target stimuli (see Appendix A). They were divided into three groups of twenty-four (24) words each. Assignment of the groups to the three levels of the study variable was distributed across subjects. Eight (8) words served as buffers and their placement did not change throughout the experiment. Two (2) buffers were presented before and after the first and second block of target stimuli. The word length of the target stimuli was no less than five (5) and not more than eleven (11) letters. The target stimuli consisted of low frequency nouns and most were concrete (Mean for targets with low frequency alternatives = 2.08 and 1.6 for targets with high frequency alternatives. Mean for the low frequency alternative solutions = 8.08 and 145.3 for the high frequency alternative solutions). The stems of the target stimuli had five to seven alternative solutions. One hundred and twenty (120) additional stems were used as fillers on the memory test. All the stems were unique within the stimulus set.

Procedure

Stimulus presentation and response collection were conducted on DOS machines that used MEL (Micro Experimental Lab). Participants were individually tested in sessions lasting about one hour. A session included four (4) phases: study, filler tasks, stem completion test, and questionnaire. The study phase consisted of

six stages: instructions, practice, the first block of Twenty-eight (28) words (24 target stimuli, 4 buffers), another set of instructions, practice, and the second block of twenty-eight (28) words. In the semantic block, participants judged the meaning of the word. The meaning was either pleasant or unpleasant/neutral. For example, "gift" would be pleasant and "table" and "ugly" would be neutral and unpleasant. In the structural block, participants counted the number of letters with enclosed spaces. For example, the word "spoon" would have three (3) enclosed spaces: the "p", and two (2) "o"s. A study trial began with a beep lasting 400 msec, followed by a study word displayed in lower case letters for 2400 msec in the center of the computer screen. If it was the semantic block, participants pressed "D" for unpleasant and "L" for pleasant. If it was the structural block, participants pressed "D" for two (2) or less letters with enclosed spaces and "L" for three (3) or more enclosed spaces. A blank screen lasting one (1) sec ended the trial.

Two filler tasks, lasting ten minutes, served as a distractor. The first filler task was to complete fragmented names of famous people (e.g., R__al__R__ga__) and the second was to complete fragmented names of famous countries (e.g., __ng__an__). The oral stem completion test included forty-eight (48) studied, twenty-four (24) baseline, and one hundred twenty (120) filler stems. The test was divided into two halves; an equal number of studied stems (24) were presented in each half. A trial began with a beep lasting 400 msec, followed by a blank screen lasting 150 msec. Next, a stem was displayed in lower case letters in the center of the computer screen for 1600 msec. Participants responded aloud with the first word that came to mind. They were tape-recorded for later transcription and scoring. A blank screen lasting 250 msec ended the trial. Subjects were instructed to avoid responding with proper nouns.

The post-completion questionnaire was adapted from Bowers and Schacter (1990) and assessed whether participants were aware that they completed stems with studied words and, if so, whether they then attempted to do so intentionally. The purpose of the questionnaire was twofold. First, it served as a manipulation check for the procedures used to minimize intentional retrieval. Second, it allowed the comparison of priming and LOP effects in test unaware, test aware, and intentionally retrieving subjects.

Results

Responses were scored as targets only if they were stated in the same form that they were used in the experiment. For example, if a subject completed the word stem "cob" with "cobweb", then it was scored as a target, but if the response was "cobwebs", it was not scored as a target. A t-test indicated a significant difference between the deep condition ($M=.30$) and the shallow condition ($M=.23$) in the stem completion task, $t(23) = 2.43$, $p < .05$. However, there was no difference in the LOP effect for low frequency words ($M=.07$) and high frequency words ($M=.08$). A t-test also indicated that a significant priming effect had been observed, $t(23) = 7.62$, $p < .05$. However, there was no significant difference in priming between low fre-

quency words ($M=.14$) and high frequency words ($M=.14$). These results support the idea that both the number of alternative solutions and their frequency play an equally important role in implicit memory tests.

Very often, different types of stems have different baseline completion rates, which can lead to difficulties in comparing performances with those stems. In our experiment, the baseline rates were matched (.16) for the low frequency words and (.10) for high frequency words. When the baselines were matched across a subset of sixteen (16) subjects at (.14) for the low frequency words and (.13) for the high frequency words, the results remained the same.

Questionnaire

Subjects were classified as aware if they answered the first three questions with answers that indicated they knew the implicit test was a memory test (see Appendix B). One subject was dropped from this analysis because they claimed to have avoided using studied words. There were three (3) categories of subjects in our experiment: six (6) were unaware, thirteen (13) were aware, and four (4) were intentionally retrieving. The priming mean for the six (6) unaware subjects was .13, for the thirteen (13) aware subjects was .15, and for the four (4) intentionally retrieving subjects was .11. None of these differences were significant. The LOP means for the six (6) unaware subjects was .04, for the thirteen (13) aware subjects was .08, and for the four (4) intentionally retrieving subjects was .06. None of the differences were statistically significant. Thus, it appears the measures taken to eliminate explicit contamination were successful.

Discussion

In this experiment, implicit memory was examined. Specifically, we analyzed the effects of a LOP manipulation and a frequency of alternative solutions manipulation on implicit memory. Prior research by Barnhardt predicted that the LOP effect and priming would increase as the frequency of the alternative solutions decreased. If this had occurred, it would have indicated that frequency of alternatives and not number of alternatives was the important element in competing with targets for subjects responses. However, neither the LOP effect nor priming increased significantly as the alternative solutions decreased. This indicates that both the frequency and the number of alternative solutions were important elements in competing with targets for subjects responses. This result is important because a significant LOP effect was found in past experiments with two to four solutions. Although there was an effect, researchers were unsure whether it was due to the few number of solutions or to low frequency solutions. However, in the present experiment, no difference was found in the LOP effect and priming between the low and high frequency words. This indicates that both the frequency and number of alternative solutions were important elements in implicit memory tests.

When subjects were classified on the basis of the post-test questionnaire as

aware, unaware, and intentionally retrieving, neither priming nor LOP differed, which indicates that there was not much explicit contamination. Therefore, LOP cannot be attributed to episodic memory.

A floor effect was one possible reason for the lack of a difference between low and high frequency words in LOP and priming. In other words, both LOP and priming in the low frequency words was so low that the LOP and priming in the unequal frequency words could not be lower.

The results from this experiment were consistent with results from past experiments in that a significant LOP effect was found observed. A similar result was found in past experiments where the number of alternative solutions was two to four. However, in the present experiment, the LOP effect did not increase as the frequency of the alternatives decreased. This indicated that both frequency and number of alternative solutions are important elements in competing with targets for subjects responses.

Conclusion

The present experiment examined implicit memory, which is measured by tests on which subjects do not consciously recall their prior exposure to the items. A significant LOP effect was observed in the stem completion task with words that had stems with seven solutions. This effect did not interact with the frequency of the alternative solutions. In prior research with stems that had fewer solutions, a LOP and frequency interaction had been observed. The present finding implies that both few solutions and low frequency of alternatives are important for observing the LOP effect. Both few solution and low frequency probably reduce the competition of alternative solutions with the target word for response. The questionnaire results did not support the idea that the significant LOP effect was due to episodic memory. Such findings further our ideas about implicit memory and highlight the fact that both perceptual and lexical memory contribute to performance on this type of test. Future research will continue to explore the nature of the memory systems that contribute to implicit memory tests.

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A Study of Senior Volunteerism

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Abstract

This study describes the experiences of senior volunteers in the Retired and Senior Volunteer Program of Tarrant County, Texas on measures of satisfaction with volunteer work and overall life satisfaction. Data is compared according to volunteer setting, characterizing respondents as intergenerational (IP) and nonintergenerational program (NIP) volunteers. Erikson's (1959) developmental model, the activity theory of aging (Ashford, LeCroy, & Lortie, 1997), and Moody's (1994) discussion of Durkheim's (1897) suicide theory and its application to aging provide a theoretical foundation supporting senior community activity. Evaluative tools include demographic data, selected questions from the Newman, Baum, and Vasudev (1983) study, and the 18-item Neugarten, Havighurst, and Tobin (1961) life satisfaction scale designed for older adults. The Dillman (1978) model for mail and telephone surveys guided procedures. Participants reported high levels of volunteer and overall life satisfaction. There were no statistically significant differences between IP and NIP volunteers.

Introduction

Senior citizens provide valuable human resources to local communities and the benefits of socially active seniors extend to the greater society. Providing and supporting opportunities for older adults to make contributions to society enhances the well-being of seniors by integrating them into mainstream society (Haber & Short-DeGraff, 1993), dispelling negative stereotypes of what it means to be old (Aday, McDuffie, & Rice-Sims, 1993) and decreasing feelings of uselessness resulting from social isolation (Wenger, Davies, Shahtahmasebi, & Scott, 1996).

The Retired and Senior Volunteer Program (RSVP) acts as a liaison between the community and potential senior volunteers by matching available resources to systems in need of social support. Maintaining diverse community ties, RSVP offers senior volunteers opportunities for involvement in diversified settings. Volunteers may choose to work in various capacities: offering peer support (e.g., providing services to homebound elderly persons through Meals on Wheels, entertaining and visiting nursing home residents, and serving on representative boards for senior citizens centers), volunteering in public service organizations (e.g., hospitals, museums, public libraries, and chambers of commerce), or working as tutors and mentors with younger members of the community (e.g., in public schools, child-care centers, and domestic abuse shelters). The final category of programs, placing older adults with children and youth, emerged in the 1970s and are known as "intergenerational programs" (IPs). Programs other than IPs are referred to as "non-intergenerational programs" (NIPs) for the purpose of this study only.

IPs were developed in the last twenty years in response to losses in extended family ties (Crites, 1989) and a growing population of children lacking adequate care (Rathbone-McCuan & Pierce, 1978). The public school system has taken on greater responsibility in socialization of the young, and senior volunteers provide a resource to the educational system (AARP, 1993). Additionally, IPs provide

important contributory roles for older adults while facilitating contact between generations (Newman, Baum, & Vasudev, 1983). Learning about the experiences of older adults involved in volunteer activities validates the benefits of IPs promoted by RSVP. Systematic comparison of reported senior satisfaction levels involved in IPs to those involved in more established volunteer activities can be used in measuring the value of the RSVP programs and other emergent IPs.

Purpose

The purpose of this study was to describe the experiences of volunteers with Tarrant County RSVP and to compare findings of individuals involved in IPs to those in NIPs. Insight into volunteer satisfaction and overall life satisfaction is derived from the information gathered in this survey and is related to the following objectives:

- * To describe the characteristics of senior volunteers;
- * To determine the extent to which volunteers are satisfied with their work;
- * To explore the impact of senior volunteerism on the well-being of participants;
- * To evaluate the overall life satisfaction of senior volunteers; and
- * To compare the characteristics, responses, and satisfaction of volunteers working in IPs to those whose volunteer activity does not involve contact with younger persons (NIPs).

Background and Significance of Issues Addressed

Evolutionary Trends

Advances in epidemiology and medicine have led to a decrease in disease, greater diagnostic accuracy, effective treatment of chronic and terminal illness, and improved preventive health care in North America (Ashford, LeCroy, & Lortie, 1997). The result is increased longevity (1997). Longer life and enhanced physical wellbeing in later lifestages challenge the present age stratification and call into question the roles relegated to elder members in society. The aging cohorts of the baby boomer generation will continue to increase the percentage of persons over the age of 65, making social problems related to the aged population of greater urgency.

Political Factors

Historically, economic crises and resulting social policies inadvertently affected society's views toward its elderly members. Only in the past two generations have current policies become the norm (Bass, 1995). "Widespread retirement by workers only became possible after the industrial revolution of the nineteenth century" (Moody, 1994, p. 298).

In implementing a program for economic recovery during the 1930's, the

Social Security Act of 1935 was enacted, thereby designating a specific age of expected retirement. Social Security established incentives for individuals in the work force to retire at age 65, creating employment opportunities for the influx of younger workers into the job market. Although equitable, this policy resulted in persons over the age of 65 becoming disengaged from mainstream society, and yielded unexpected forms of social inequality and prejudice toward elderly persons.

Demographic Trends

Increasingly mobile and nuclear families have resulted in the loss of informal helping networks once inherent in traditional extended families (Wrenn, Merdinger, Parry, & Miller, 1991) where the roles of elderly members were vital in supporting young families and in socializing children. The value of elder persons in the traditional family was generalized to attitudes in the society at large.

Today, however, the emphasis on mobility as an asset in post-industrial society interferes with the maintenance of extended families frequently separated from kin by geographical distance (Angelis, 1992). The evolution of the American family and the dissolution of extended family ties have thus eliminated a primary setting for societal intergenerational exchange (Newman, et al., 1989).

Social Barriers

Political, social, and economic systems govern how a society defines the worth of its members. The detachment of elderly persons from mainstream life results in their alienation and is translated into inaccurate perceptions of age norms that associate old age with dementia and physical frailty (Baltes & Carstensen, 1996). In a society that emphasizes productivity, those kept from roles enabling them to make positive contributions to the society are seen as less valuable. According to Fry (1980), societies arrange themselves into subgroups with ascribed positions and expectations assigned according to the definitions of group membership. Further, Fry observes that certain behaviors are relegated to particular groups according to age. The roles associated with group identification determine the status and treatment of group members. Elders in contemporary society tend to be viewed in terms of the burden they place on society (Amoss & Harrell, 1981). Current social conditions alienating aged members from the mainstream inhibit them from fulfilling productive roles.

Literature Review

Theoretical Framework: Aging Perspectives

Erikson: Adult and Late Life Development

The growing percentage of the elderly populace (now representing 20% of the North American population) merits attention to theories focused on the needs of older persons (Ashford, et al, 1997). According to Erikson (1959), developmental

stages of the lifespan highlight the importance of integrity in later life. Developmental theory emphasizes the desire for a "sense of contribution to the future" (Bengtson, 1996, p. 216) as an integral part of maturation. Erikson's theory of generativity in adulthood is seen in the later life stage of Integrity v. Despair: "death itself (as nonbeing) becomes acceptable if life tasks have been completed and there is not unfinished business" (Bengtson, 1996, p. 131). Generativity characteristic throughout adulthood leads to the development of the integrity realized in the knowledge that individual contributions may be perpetuated after death (Bengtson, 1996). Consistent with Erikson's focus on generativity, Moody (1994) observes:

Awareness of something transcending the individual life is a universal human capacity. . . . Erikson sees each stage of life as a period with a special purpose or psychological task to be achieved. Old age is different from the other stages of life because it offers a kind of culmination to life. But Erikson believes that it is through concern for the welfare of future generations that older people find a sense of meaning in the final stage of life (p. 403).

Traditional exchange theory emphasizes the reciprocity of caregiving toward older persons by younger members (Moody, 1994). Increased longevity and the dependency associated with old age create an imbalance in reciprocity. Older adults who maintain their productivity avoid becoming dependent and perpetuating the belief that they represent a burden and have nothing valuable to offer the society. Extending the contributions of older adults capable of offering support for younger generations delays premature dependency among elderly individuals. Intergenerational relationships thus help secure reciprocity for the final life stage when caregiving may become essential.

Moody: Aging and Durkheim's Anomic Suicide Theory

Moody (1994) sees the loss of meaningful roles as a contributor to suicide among the elderly. The author discusses Durkheim's (1897) association of suicide with the lack of purpose experienced by persons who do not maintain social ties. Durkheim recognized anomic and egoistic suicide as resulting from a lack of meaningful relationships (Moody, 1994). For Moody, such theories explicate the causation of suicide among the elderly population. Suicide is among the top ten causes of death in older persons, amounting to 17 per 100,000, in contrast to the suicide rate of 12 per 100,000 in the overall population. This phenomenon is most pronounced among older males whose sense of self has been more closely related to their work. In 1980, suicide among white males over the age of 85 were 66 in 100,000 compared to 5 in 100,000 among females of the same age (1994).

The isolation experienced by those displaced from their social roles increases the likelihood of illness and dependency (Wenger, et al, 1996). Elderly persons whose cognitive and physical abilities would otherwise enable them to continue making important societal contributions risk decline due to their alienation from mainstream society (1996). These individuals are prone to profound loneliness and a rapid de-

crease in self-worth (1996). Depression leads to both physical and mental decline. Wenger, et al. observe:

'poor physical health is related to both social isolation and loneliness. . . isolation appears to be highly correlated with mental disorder. . . this is more marked when isolation develops late in life.' This suggests a causal relationship: late developing isolation may lead to mental disorder rather than the other way around (p. 338).

Disengagement v. Activity Theory

Disengagement theory emerged during the 1960's in support of the mutual separation of society and its elder members, facilitating acceptance of the inevitable decline and death associated with the aging process (Haber & Short-DeGraff, 1990). This widely accepted theory tends to justify decreased interaction between old persons and the greater society. The popularity of this theory declined as persons obtaining success and influence in younger years began living longer than the norm, and as medical advancements enabled them to maintain a greater quality of life and health.

As the baby boomer generation ages, the concerns of this influential group will inevitably translate into greater emphasis on practices enhancing the well-being of elder members. This development is consistent with Marxist theory of ideological hegemony: what is important to the elite of a culture comes to the forefront in political and social policy and social norms are shaped by this influence (Hess, Markson, & Stein, 1996). The influence of the baby boomers will provide the impetus for redefining the roles of older members.

In contrast to disengagement theory, activity theory emphasizes the benefits of continued social participation by older persons in social settings (Haber, Short-DeGraff, 1990). The belief that the psychological and physical well-being of elderly persons is perpetuated through continued social interaction undergirds this approach (Wenger, et al., 1996). Maslow's hierarchy of needs, focusing on self-actualization, supports activity theory and is increasingly relevant for older adults who, living longer, healthier lives seek outlets for meaningful activity (Ashford, et al., 1997).

Review of Relevant Research

Emphasis on Program Evaluation

Although early IP studies emphasize overall positive results and support the imperative for the continuation of such programs, researchers recognize the need for further evaluative measures documenting and validating the impressions of program participants (Crites, 1989). Sociological studies require adherence to ethical strictures and challenge the researcher's ability to conduct controlled studies, further constraining generalizable conclusions (Nishi-Strattner & Myers, 1983). "Although devised and conducted with laudable intentions, intergenerational con-

tact research has, for the most part, been fraught with methodological inconsistencies, a lack of theoretical underpinnings, and little attention to the communicative behaviors occurring within the contact situation itself " (Fox & Giles, 1993, p. 423-25). Seefeldt (1989) addresses the importance of increased efforts toward more precisely documented evaluation utilizing testing, statistical analysis, and observational inference. Guided research defining and measuring specific objectives is vital to achieving research accountability (1989).

Evaluation must take into consideration the aspects unique to IPs. Bocian and Newman (1989) describe the characteristics that must be considered:

1. Two very different client populations participating in the program, necessitating different methods of collecting evaluative data.
2. Two discrete and independent agencies or systems implementing the intergenerational program and involved in the evaluation effort.
3. Diverse program outcome data that include affective and cognitive impact on the program participants and performance impact on the staff.
4. The opportunity to address social issues through a process of interagency collaboration and cross-generational exchange (p. 149).

Prior Studies of Volunteer Satisfaction and Life Enhancement

In 1985, Newman, Vasudev, and Onawola reported their findings derived from a survey of 180 volunteers, ranging in age from 55 to 85. Samples were drawn randomly and equally (60 individuals per program) from the New York City School Volunteer Program (NYCSVP), the Los Angeles Dedicated Older Volunteers in Educational Services (DOVES), and the SCSVP (as described in the 1988 study). Data was derived from open and closed-ended inquiry. Improved life satisfaction in 65% of respondents and feelings about self in 75% of respondents were reported.

In a 1988 study, Newman gathered data from seniors involved in the Generations Together Senior Citizen School Volunteer Program (SCSVP) from 1983 to 1986. Seniors placed in fifteen public school districts of Allegheny County, Pennsylvania, work primarily as tutors. Sixty-five percent of participants were between the ages of 60 and 65; 30% between 65 and 70; and 25% over 70. Three hundred eighty-one participants responded to a 20-item open and closed-ended questionnaire at the end of the school year. Respondents reported increases in the following areas: 75% in areas of self esteem; 77% in life satisfaction; 86% regarding feeling needed; and 59% related to community involvement. Qualitative data was supportive of these findings.

In a 1989 longitudinal study by Saltz, the impact of the Detroit Foster Grandparent Program (FGP) on senior volunteers was discussed. During its inception in 1986, 37 foster grandparents, ranging in age from 60 to 75, were evaluated prior to and after 1 and 2 years of participation with a 7-year follow-up. Measurement tools included personal interviews, IQ testing (Wechsler, 1955), observation, and evalu-

ation of health status. Respondents showed a significant increase in life satisfaction after one, two, and seven years of participation. Average IQ scores rose from a pre-test mean of 96 to a post-test mean of 104. Perceived improvements in health and increased energy were reported by one-half of the subjects. The 7-year follow-up revealed that 13 of the 18 then inactive foster grandparents cited failing health as the primary reason for dropping from the program.

In 1992, Kuehne conducted a study of 24 individuals over the age of 55 participating in an intergenerational project for at least 6 months and interacting with children at least once a week. Measurement devices included interviews utilizing open and closed-ended questions and observations. One hundred percent of seniors working with school-aged children indicated that interacting with children was the most important aspect of their program activities. One-half of those working with school-aged children stated that they believed the children received emotional benefits. Another 32% recognized that intergenerational exchange provided a social value by exposing children to older adults. It should be noted that those working with preschoolers were either residing in nursing homes or attending adult day care, while those working with school-aged children were living independently in their homes or in retirement communities.

In another 1992 study, Newman and Riess surveyed 34 women employed in five intergenerational childcare centers located in Memphis, Pittsburgh, and San Francisco. The research explored the increase in self-perceived wellbeing of these individuals as a result of their work. The survey consisted of a 30-item questionnaire, the Life Satisfaction Scale (Neugarten, et al., 1961) and semi-structured interviews. Higher levels of positive impact of volunteer work on well-being were found among widowed workers and workers with the lowest household income. Results of the Life Satisfaction Scale included a mean score of 12.2 with a standard deviation of 2.8. More than 75% reported increases in self-worth and feeling needed.

Methodology

This 9-week study was conducted in cooperation with the RSVP in Tarrant County, Texas. The purpose was to describe the experiences of senior volunteers, measuring the self-perceived impact of and satisfaction with volunteer activities and overall life satisfaction. A convenience sample of 164 registered volunteers was selected from the agency's database. The volunteer profile according to the agency's records from January 1, 1998 through May 1, 1998, listed 1,227 enrolled volunteers with 1,010 identified as active during that period. Volunteers work, on average, 10 hours per week. Approximately 8% (N=82) of all registered RSVP participants are involved in intergenerational type programs; all 82 were included in this study. The remaining subjects were taken from a random sample (n=82) of volunteers involved in programs not identified as intergenerational.

IP volunteers provide support to children and families in programs involving education, healthcare, child abuse, teenage pregnancy, and juvenile corrections. Support for public education represents the largest portion of intergenerational

volunteer activity, with over one-half of the IP participants tutoring and mentoring students at the Arlington Independent School District. Twenty-nine seniors are involved in a recently developed immunization program aimed at educating and encouraging mothers (often teenagers) in disadvantaged circumstances to improve preventive healthcare for their children.

Outside of intergenerational activity, senior volunteers contribute to the community in a diversity of settings. Forty-eight seniors provide services for Meals on Wheels. More than 100 seniors participate in adult education programs, teaching in the Tarrant County Community College system, vocational, GED, and literacy classes, and in promoting cultural heritage awareness. Nearly 200 seniors work in acute care hospitals and another 49 provide hospice support. Public and government volunteer work is performed in local museums, the municipal parks and recreation department, the chamber of commerce, and the public library system.

Measurement Tools

Participants received via mail a 16-item survey of open and closed-ended self-report questions related to their volunteer experience and the 18-item Life Satisfaction Scale (Neugarten, et al., 1961) (Appendix A). Survey questions were items selected from the 1983 Newman, et al. study (Appendix B). The Life Satisfaction Scale was obtained from the Measures for Clinical Practice (Fischer & Corcoran, 1994).

Methods

The survey process for this study utilized the Dillman (1978) design for mail and telephone surveys. The Dillman text outlines approaches specifically developed for such surveys and discusses ethical considerations regarding informed consent, confidentiality, and research bias. Specific examples were applied in composing a succinct cover letter (Appendix C) and an appropriate follow-up postcard (Appendix D).

Survey participants were assigned identification numbers to maintain their confidentiality. Personal information necessary for contact and tracking purposes was accessed but kept separate from all other materials. Demographic information (acquired from the RSVP database) and survey material of individuals selected were matched and input according to the identification codes.

For textual purposes, values referred to in narrative portions of data description are rounded to the nearest whole percentage.

Approximately one week after mail out, one-fourth ($n=41$) of sample subjects completed and returned surveys. Follow-up contact by telephone was attempted for those not yet received. Messages left on answering machines sufficed for contact in some cases. Postcards were sent when a telephone number was unavailable or if attempted contact failed. Of those reached by phone, typical reasons cited for declining to participate included illness (or spousal illness), lack of time,

or a feeling that questions were too invasive.

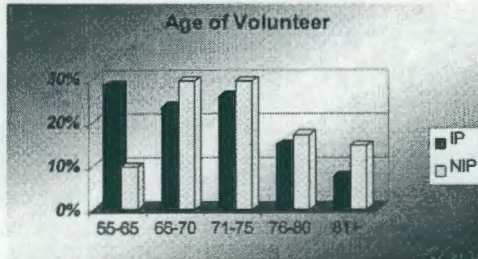
Response Rates

Overall response rate was 55% (90 returned out of 164). Sixty-three percent (n=52) of respondents were IP volunteers. Forty-six percent (n=38) of respondents were NIP volunteers.

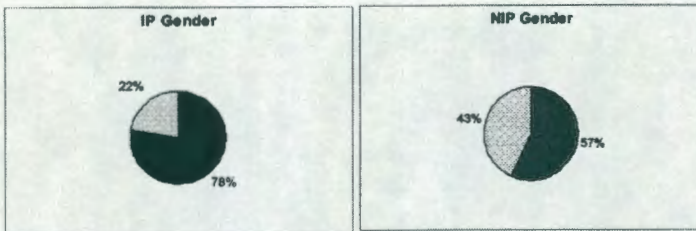


Demographic Data

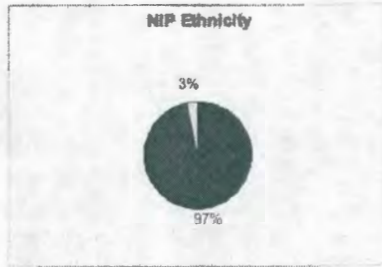
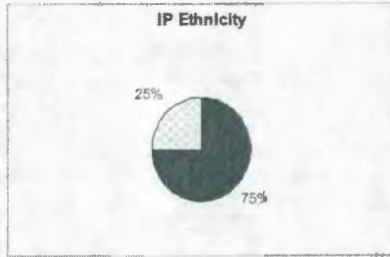
Demographic information was derived from volunteer applications completed by seniors at the time of enrollment in RSVP. Demographic data described is inclusive of the total number (n=164) selected for participation in this study. The mean age of IP volunteers is 69.98, while the mean age of NIP volunteers is 72.79.



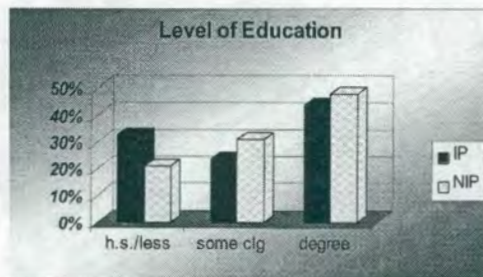
Seventy-eight percent (n=64) of IP volunteers are female; 57% (n=47) of NIP volunteers are female.



IP volunteers are self-identified as 75% (n=54) Caucasian and 25% (n=18) African American (10 gave no indication). NIP volunteers are self-identified as 97% (n=73) Caucasian and 3% (n=2) are identified as African American (7 gave no indication).

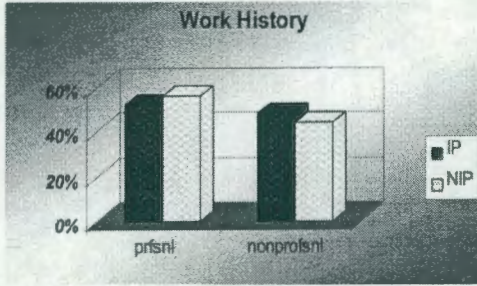


Seniors were asked to specify the highest educational level obtained and employment history. Choices for educational levels were divided into (1) less than high school, (2) high school graduate, (3) some college, (4) associate's degree, (5) bachelor's degree, and (6) post-graduate degree. For the purpose of this study, categories were collapsed into: (1) high school graduate or less, (2) some college, and (3) degreed. In IP volunteers 29% (n=23) indicated they were high school graduates or less, 32% (n=31) indicated they had some college, and 39% (n=31) indicated they had earned a college degree (3 gave no indication). In NIP volunteers, 23% (n=17) indicated they were high school graduates or less, 31% (n=23) indicated they had some college, and 46% (n=34) indicated they had earned a college degree (8 gave no indication).



Applicants identified employment history as (1) professional, (2) education, (3) health care, (4) blue collar, (5) retail/sales, (6) office/clerical, (7) manage-

ment, and (8) at home. For purposes of this study, categories were collapsed into professional (education, health care, and management) and nonprofessional (blue collar, retail/sales, office/clerical, and at home). Fifty-two percent (n=43) of IP volunteers identified themselves as professional, while 56% (n=46) of NIP volunteers identified themselves as professional.

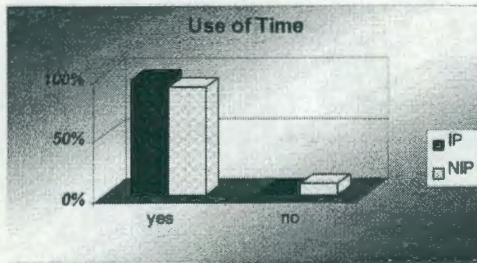


Findings

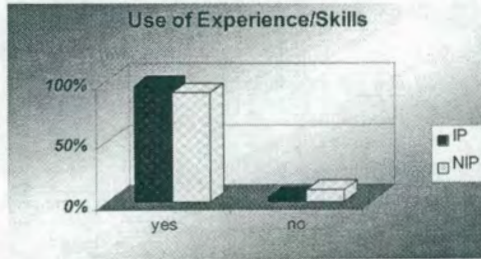
Numerical values were assigned to questionnaire responses and data entered in SPSS 7.5 for analysis. Cross tabulations using chi-square analysis were used for comparisons between IP and NIP volunteers. No statistically significant differences were found between volunteers in IPs and NIPs on any measures. Results were tabulated using frequency data and expressed in percentage values. Questions are categorized according to (a) volunteer satisfaction, (b) effects of volunteer work, and (c) overall life satisfaction. Data is presented in terms of IP and NIP experience.

Volunteer Satisfaction

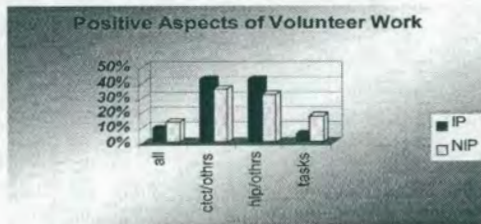
When participants were asked if their time is adequately utilized during volunteer activity, 96% (n=50) of IP volunteers and 90% (n=34) of NIP volunteers answered "yes."



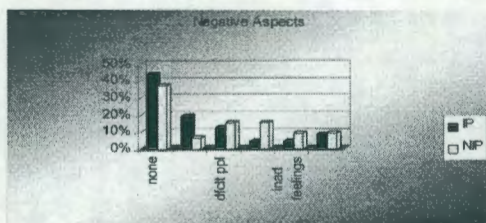
Ninety-six percent (n=50) of IP volunteers and 78% (n=30) of NIP volunteers answered positively that their experience and skills are utilized.



Forty-two percent (n=22) of IP volunteers stated that contact with children is the most enjoyable aspect of their work. Thirty-six percent (n=17) of NIP volunteers stated that contact with others is the most enjoyable aspect of their work. Helping others was stated as the most enjoyable aspect 42% (n=22) of the time for IP volunteers and 32% (n=12) of the time for NIP volunteers. Specific tasks were identified as the most enjoyable aspect for 6% (n=3) of IP volunteers and for 18% (n=7) of NIP volunteers.

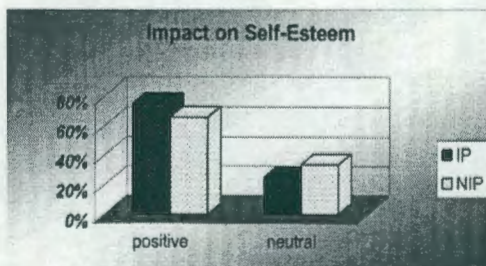


When asked to describe the least enjoyable aspect of their work, 44% (n=23) of IP volunteers and 37% (n=14) of NIP volunteers answered "none." Negative aspects most commonly cited were working with difficult children/others, constraints on individual contributions by agencies, boring and administrative tasks, and logistical problems such as transportation and inclement weather. In response to the question, "How would you rate the volunteer program you are involved in?" and given the following options: (a) excellent; (b) good; (c) fair; and (d) poor, 58% (n=30) of IP volunteers and 61% (n=23) of NIP volunteers rated their program as "excellent." Thirty-seven percent (n=19) of IP volunteers and 37% (n=14) of NIP volunteers rated their program as "good." No respondents rated their program as poor.

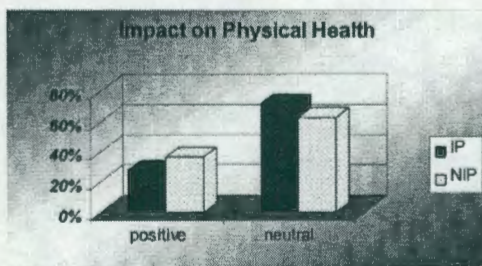


Effects of Volunteer Experience

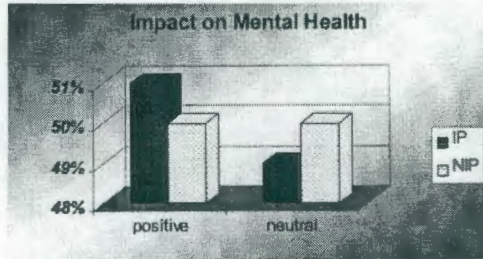
Respondents were asked what impact their volunteer work had on them personally in the following areas: (1) feelings about self, (2) physical health, (3) mental health, (4) social life, and (5) outlook on life as (a) improved, (b) no change, or (c) made worse. Seventy-five percent (n=39) of IP volunteers and 66% (n=25) of NIP volunteers indicated their feelings about themselves had improved as a result of their work.



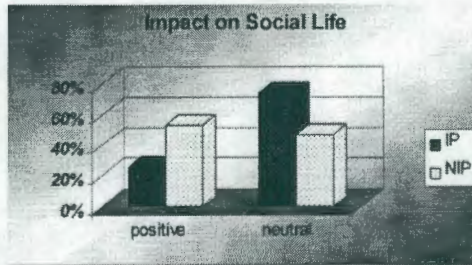
Twenty-eight percent (n=15) of IP volunteers and 37% (n=14) of NIP volunteers indicated improved physical health as a result of their work.



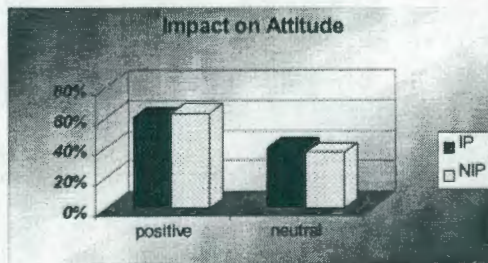
Fifty-one percent (n=27) of IP volunteers and 50% (n=19) of NIP volunteers indicated a positive effect on their mental health.



Twenty-six percent (n=14) of IP volunteers and 53% (n=20) of NIP volunteers indicated improved social life.



In response to the impact of their volunteer work on life outlook, 60% (n=31) of IP volunteers and 63% (n=24) of NIP volunteers indicated an improvement.

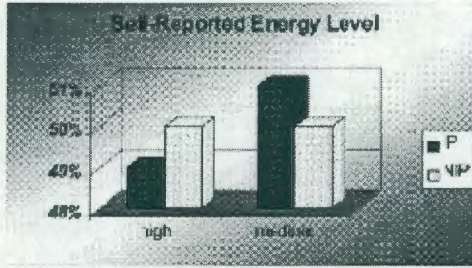


There were no indications of negative effects in any area as a result of volunteer work.

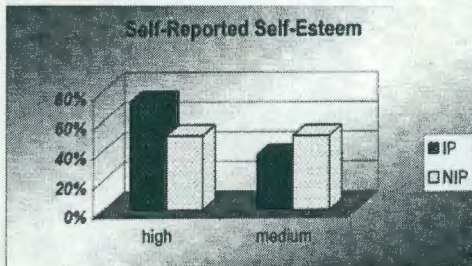
Overall Life Satisfaction

Participants were asked a series of questions related to self-perception on (1) levels of energy, (2) self-esteem, (3) community involvement, and (4) outlook on life, using a scale of (a) high, (b) medium, or (c) low. Fifty-one percent (n=27) of IP volunteers reported their energy level as "medium," while 50% (n=19) of NIP vol-

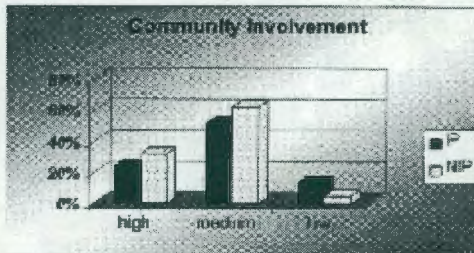
unteers reported "high" energy levels.



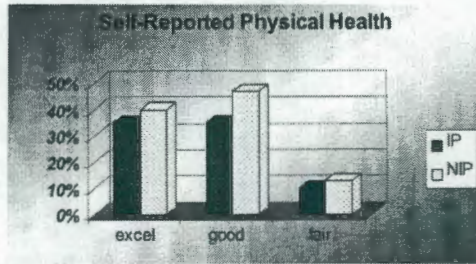
In ranking their level of self-worth, 73% (n=38) of IP volunteers and 50% (n=19) of NIP volunteers reported a "high" level of self worth.



In response to extent of community involvement, 52% (n=27) of IP volunteers and 63% (n=24) of NIP volunteers indicated "medium" levels of community involvement. Seventy-one percent (n=37) of IP volunteers and 74% (n=28) of NIP volunteers regarded their outlook on life as "high." Only in ranking community involvement did participants indicate "low" levels (14% [n=7] IP; 5% [n=2] NIP).



Self-reported physical health for IP volunteers was reported as "excellent" in 35% (n=18) of respondents, "good" in 35% (n=18) of respondents, and "fair" in 10% (n=5) of respondents. Indicators of self-reported physical health for NIP volunteers were reported as "excellent" in 40% (n=15) of respondents, "good" in 47% (n=18) of respondents, and "fair" in 13% (n=5) of respondents.



Outcomes for the Life Satisfaction Scale (Neugarten, et al., 1961) showed a mean score of 13.77 for IP volunteers with a standard deviation of 3.08. The mean score was 14.50 for NIP volunteers with a standard deviation of 2.63. Only participants who answered each item on the Life Satisfaction Scale were included in calculating averages.

Discussion and Conclusions

Studies involving self-selected subjects inherently limit the generalization of conclusions. However, the findings of this survey indicate that those participating in the volunteer activities offered through RSVP are satisfied with their work and report their experiences as positive. Responses further reflect that volunteers feel their activities impact their lives in a positive way. Interacting with and helping people of all age groups in a variety of settings fosters a sense of well-being for these older adults.

Responses to open-ended inquiry attest to this conclusion. When asked to describe the most enjoyable aspect of their volunteer work, IP volunteers stated:

- "feeling that I am helping these students to improve their reading skills"
- "seeing the accomplishments of the students"
- "knowing how much the kids enjoy their color books"
- "having students express their enjoyment and help they've received"
- "I'm looking forward to school starting. I really enjoy the kids. They recognize me if they see me at the mall, call out my name, run up and hug me."

In response to the same question, NIP volunteers stated:

- "working with nice people who make you feel like you are a big help"
- "that I am making a contribution to others and using my time"
- "I like being able to help, to take part in all I do. I pride myself on it being done right."
- "feeling useful and needed, contributing worthwhile work"
- "seeing someone learn a new skill or social aspect"

"the enjoyment of helping people in need—meeting people of all facets of life"

Differences between IPs and NIPs must be considered during program development, implementation, and evaluation. However, comparative analysis links them in terms of outcomes as seen in this survey. Volunteers select and continue to participate in activities that bring them the greatest satisfaction. Comparable satisfaction levels between various senior volunteer programs substantiate the value of providing diverse volunteer opportunities for seniors. The findings in this study are also consistent with prior research specifically focused on IP volunteer satisfaction.

Although 54% (IP and NIP combined; inclusive of those who responded with a line across the answer blank) of respondents reported no negative aspects, some reflected possible discrepancies between the expectations of volunteers and those who define their roles, or indicated that volunteers are asked to perform tasks outside of the duties initially explained to them upon placement. Examples of such incongruencies are found in statements of survey participants asked to describe the negative aspects of their volunteer experience: "I don't enjoy folding and stuffing envelopes," and, "when agency is poorly organized so I can't do what I came to do," or, "following an exact lesson plan," and, "not [being] able to do some of my own ideas."

Other seniors expressed frustration in dealing with difficult people in the following remarks: "sometimes people are cranky and I do not enjoy that," or, "when people are mad and fussy," and, "some of the responses from people I am trying to help." Feeling a limited ability to provide adequate support to those in need of services beyond the scope of the agency or the defined role of the volunteer is also of concern to volunteers. Respondents related their feelings: "not feeling prepared sometimes," and, "not always being able to help a person in need," or, "seeing situations where one cannot help adequately," and, finally, "to see someone so unhappy and [I] cannot understand."

Recommendations for Future Research

The size of the sample used in this study was relatively small, and systematic comparison revealed no statistically significant differences between IP and NIP volunteers. However, indications of characteristics distinguishing the two groups did appear and warrant further study. In considering education levels and work history, the data implies that IP volunteers represent lower educational levels and a more nonprofessional employment background. Such indicators may be relevant for target recruitment.

Notably, various items in the questionnaire were frequently left unanswered by respondents. Improvement of measurement devices sensitive to the study of older adults might increase response rates for questions considered too invasive. Survey data also revealed that items generating a negative response were often unanswered.

Observational research would offer the opportunity to gain additional insight into the experience of volunteer subjects. Personal interviews enhance qualitative data vital in the study of human subjects by increasing the quality of open-ended response, encouraging respondents to relate anecdotal information impractical in a written response survey.

Beyond the data obtained from senior participants, the value of IPs may be explored further by conducting more comprehensive studies inclusive of the experiences of younger participants and the reactions of professionals employed in settings where IPs occur. In assessing the importance of older adults acting as tutors and mentors to children, quantitative analysis of measurable outcomes seeking evidence of changes in academic performance of students participating in IPs and investigating observable behavioral effects would further illuminate the value of such programs.

Implications for Social Work Practice

Historically volunteerism has served an integral role in the delivery of social services (Jansson, 1997). Systems providing vital services to the community, frequently faced with budgetary constraints and limited human resources, continue to look to voluntary associations for complementary support (Fellin, 1995).

From a social systems perspective, social work practitioners realize the utility of recognizing assets already in place within the community (Fellin, 1995). Senior members of society represent a valuable resource to social service agencies. As broker and provider of human services, social work practitioners can benefit by capitalizing on the potential of senior citizens. Working in diverse settings, practitioners may offer a range of opportunities for older adults to serve clients by simultaneously addressing the needs of two distinct populations, thereby augmenting available resources (Newman, 1989).

Specific to practice with older adults, it is important that volunteers feel that they are utilizing their time and skills in a meaningful way. Seniors may need encouragement in asserting their wishes and dislikes to persons who instruct them directly, to supervisors, or to the RSVP staff. Volunteers should be encouraged to request alternative placement if matters cannot be resolved, or if duties are not acceptable to the volunteer. Greater efforts in training those who work directly with volunteers to recognize and utilize the talents and skills of senior volunteers is wholly beneficial. Increasing understanding between professionals and volunteers may enrich the experience of all participants and promote acceptance of senior volunteers.

Staff may help volunteers to better understand the limitations of their roles while emphasizing the positive effects of their work, and that the greater impact of such work may not be immediately evidenced. Agency representatives may provide seniors with information about and facilitate the process of obtaining alternative resources available to those with whom they come into contact. Encouraging and facilitating dialogue between senior volunteers, those who work directly with

them and entities mediating the volunteer process may enhance the potential for positive outcomes for participants and maintain the activities of seniors in the community.

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Evaluation Criteria for the Transitional Skills Program at Tarrant County Junior College, Southeast Campus

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Abstract

The purpose of this paper is to establish criteria for evaluation of the Transitional Skills Program at Tarrant County Junior College, Southeast Campus in Arlington, Texas. The goal of the program is to improve the quality of life among the mentally challenged by enhancing academic, vocational, social and daily living skills. The evaluation process will measure the effectiveness and accomplishments of the program based on interviews with family members. Results from the program evaluation will reveal participants' quality of life improved through participation in the Transition Skills Program.

INTRODUCTION

Many individuals, upon graduation, have the opportunity to attend college in order to enhance education, socialization, and self-esteem in addition to strengthening vocational skills. When an individual with a mental disability graduates from high school, however, few options are available. Studies indicate that persons with a mental disability are often overlooked in post-secondary education (Ticoll, 1995). Dennis, Williams, Giangreco, and Croninger (1993) suggest the normalization principle supports the rights of individuals with mental retardation and "give rise to practices such as ... educational placement" (p. 502). A review of the literature suggests the need for program evaluations in order to determine the effectiveness of post secondary education for the mentally retarded. (Huges, Hwang, Kim, Eisenman, & Kilian, 1995). Literature also implies services lacking in the area of "vocational skills training, recreational activities, and social activities..." (Grosser & Vine, 1991. p. 288). The purpose of this study is to present and discuss the development of the Transitional Skills Program at Tarrant County Junior College (TCJC) in Arlington, Texas, and to establish criteria for an evaluation of the program. Implications for social work practitioners from a naturalist perspective are discussed as well. The process will measure the effectiveness and accomplishments of the program based on interviews with family members.

Transitional Skills was founded by the grass-roots efforts of families of children with mental challenges. The group, known as Advocates for Special People, was established in 1997. Upon their children's graduation from high school, parents were faced with the inadequate day programs for their children. Families found "long waiting lists for work shops" and "no social activities" for their children during the workweek (Advocates for Special People, 1997). During a meeting of the ASP, members reiterated their frustration citing the lack of day programs for their child and an increase in sedentary activities such as watching television. The founders of Advocates for Special People (ASP) desired more for their children. ASP searched for programs that would challenge their adult children "to be pro-

ductive citizens in their communities" and "to be offered continuing education to assist them in developing daily living skills, socialization skills, and academic skills" [Table 1] (ASP, 1997).

Table 1	Population	Problem	Skills building TCJC
	High school graduates with mental retardation	Daily activities Social activities Physical activities	Academic skills Work readiness skills Daily living skills Socialization skills
	Families of children with mental retardation		

"Approaching families/students in a holistic manner fosters the collaboration of all support services to meet their needs" (Repetto & Correa 1996, p. 11). This collaboration is exhibited in the cooperative effort between ASP and Tarrant County Junior College (TCJC). The goal of the Transitional Skills program is to offer continuing education to those with mild to moderate mental retardation (see Table 2 for definition) in order to improve the quality of life by enhancing academic, vocational, social and daily living skills. As stated in an interview with Ms. Carrie Tunson, Dean of Continuing Education at Tarrant County Junior College-Southeast Campus, community colleges are an ideal setting for such programs as the Transitional Skills. The purpose of the community colleges is to service and meet the needs of the community (personal communication, June 1998). This statement is reiterated by Susan Garnett, Tarrant County MHMR, when she spoke at the Mayor's Committee on People with Disabilities held June 25 - 27, 1998. Ms. Garnett stated it is the community's responsibility to care for its neighbors/individuals (June 1998). Uditsky and Kappel (1988) further support the notion of post-secondary education as "an ideal place to further the goals of community integration because it provides: 1) a generic setting, 2) integrated activities of life-long learning, 3) a philosophy of life-long learning, 4) natural and meaningful environments used for integrated activities that occur at normal times of the day, and 5) an array of services" (p. 9).

Table 2 (DSM-IV, 1994, p.46)

Mild retardation	IQ level 50 - 55 to approximately 70
Moderate mental retardation	IQ level 35 - 40 to 50 - 55
Severe mental retardation	IQ level 20 - 25 to 35 - 40
Profound mental retardation	IQ level below 20 or 25

The unique feature of the Transitional Skills Program at TCJC is its ability to incorporate academic, vocational, daily living and socialization skills. This vision is stated in the goal of the Transitional Skills Program by "successfully preparing mentally challenged students to make the transition from co-dependency to independent living. The program is "designed to prepare students for vocational training and job readiness [through] the enrichment of academic skills and the enhancement of critical life skills" (Brochure, 1998). An extensive search of literature using derivatives of mental retardation, special needs education, and post secondary education revealed many program evaluations measuring: independent living skills (Matson, Bamburg, Smalls, & Smiroldo, 1997), education (Saint-Laurent,

Dionne, Giasson & Royer, 1998), employment (Petroski & Gleeson, 1997; Chadsey-Rusch & Linneman, 1997; Jiranek & Kirby, 1990), and quality of life (Greenley, Greenberg, & Brown, 1997; Hatton, 1998). However a program involving all elements could not be found. Arnold, Vollintine, and Waldrop (1994) assert "more public special education programs need to be directed toward increasing the independence, productivity and community integration of students with disabilities" (p. 634). In order to measure the program's effectiveness, questions for this research include:

1. Does education increase independence?
2. Does the Transitional Skills Program meet needs of the students by providing:
 - * Work readiness skills
 - * Daily living skills
 - * Academic skills
 - * Socialization skills
3. Does participation in the program increase the quality of life among those with mental retardation?

METHOD

Participants

Participants for the study consist of members of Advocates for Special People. Ten families agreed to be interviewed for the study; however, two families were not available at the time of the program evaluation and thus were not interviewed. Participants were interviewed via telephone conversations. All families had a child with mental retardation that participated in the Transitional Skills Program in the 1997/98 school year.

Measures

A short questionnaire was developed in order to gauge program effectiveness from a family perspective. The questionnaire was divided into two sections. Section one consisted of general/demographic questions. Section two of the questionnaire consisted of parental attitudes towards to the Transitional Skills program.

PROCEDURE

An initial questionnaire was developed from a university class project in order to evaluate the Transitional Skills Program. The survey was introduced as a tool to build upon in order to develop criteria for program evaluation. The names and phone numbers of persons willing to participate in the survey were given to the researcher; participants were then contacted by telephone. The goal of the research was explained to the participants with confidentiality emphasized; individuals were then invited to take part in the study.

Before the interview began, participants were informed of the need for consent in order to proceed with the questionnaire; all participants agreed to sign the consent form for the study. The researcher explained the survey to the partici-

pants, noting responses consisted of "yes" or "no"; however, participants were encouraged to elaborate answers. Time allotted for the administration of the survey was 20 to 30 minutes.

Another component of the evaluation was measurement of the academic performance of the 1997/98 students in the Transitional Skills Program. The Texas Adult Basic Education (TABE) test was administered at the beginning of the Fall and Spring semesters in order to establish academic placement of students. The TABE exam results were obtained from TCJC for the purpose of this study.

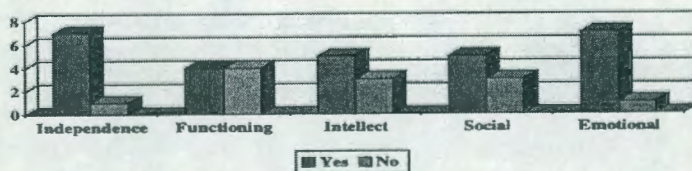
RESULTS AND DISCUSSION

Quantitative responses were analyzed using HyperRESEARCH (1995) for Windows. Academic scores were analyzed using SPSS 7.1 for Windows. Names of the participants were not used in order to protect the confidentiality and allow the participants to express opinions freely.

Quality of life

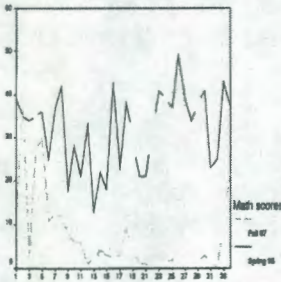
For the purpose of this study, the definition used to define quality of life comes from a review of the literature by Hughes, et al in 1995. The authors' report consists of 15 measurements for their definition of the meaning "quality of life." These include: personal satisfaction, social relationships, employment, physical well-being, self determination, independent living skills, recreation, and normalization. Graph 1 represents the attitudes of families members based on different aspects of quality of life. Seventy-eight percent of families reported an increase in the level of independence exhibited by their child, specifically their child's ability to handle transportation issues and find their way around a college campus. Families were split 50/50, as to the functioning level, i.e., daily activities of their adult child. Sixty-three percent of families also reported an increase in the intellect of their child (more information will follow in the academic section). When asked if family members noticed an increase in social skills, again 62.5 percent of family members responded positively. Many noted that their child already exhibited social interaction with peers because the program expanded their circle of friends. The most positive responses came when asked if their child had exhibited new emotional development. Eighty-eight percent of families responded favorably, stating their child's self-esteem increased due to their attendance of classes in a "college" setting.

Graph 1
Developmental awareness

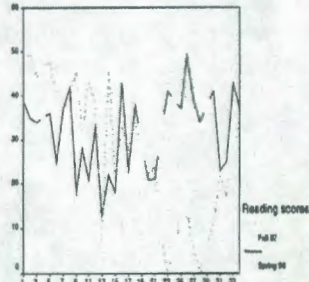


Academics

Graph 2 illustrates mathematical scores from the Texas Adult Basic Education exam. As noted from data entered into SPSS, math scores increased at a mean level of 6.21, with a standard of deviation of 2.35. This supports testimonial from family members noting an increase in mathematical skills and use of calculators. Graph 3 illustrates the reading scores from the same individuals. Reading levels showed a small increase in a mean score of 3.32, with a standard of deviation of 6.07. These findings support families' comments of not observing any significant difference in their child's reading skills. The IQ level of the students in the program did not appear to have an effect on the mean scores from SPSS data.



Graph 2



Graph 3

Program strengths and weakness

Quantitative responses indicate 20 percent of families surveyed did not feel the program was appropriate for their adult/child. Families cited that their child functioned at a higher IQ level than other students in the class, these students are diagnosed as learning disabled and mild retardation. Families cited the number one concern of the program was the turnover rate of the instructors. Mrs. Tunson, Dean of Continuing Education at TCJC, acknowledged this concern stating, the "teachers' experience is most problematic" (personal communication, June 98). Ticoll (1995) states faculty and staff 's lack of understanding the special needs of persons with mental retardation as a common problem (p. 14). In order to rectify this problem Mrs. Tunson has contacted and met with individuals at the ARC of Tarrant County, Texas, for training new instructors and aides (Mayor's Conference, June 98).

Families were most impressed by the professionalism exhibited by the staff and instructors at TCJC, particularly the efforts of Dean Tunson. Members of ASP were pleasantly surprised by the cooperation and support expressed by TCJC and Dean Tunson at the onset of the program. Although the Transitional Skills Program is still evolving, families and educators in the program have been patient in its development. All families interviewed stated that although the program is in its infancy, TCJC has been receptive to suggestions for change and implementation.

Parents of the students have been an invaluable asset in assisting TCJC by offering course suggestions.

Limitations of study

Research limitations are acknowledged in this study. Foremost, the sample population was quite small, and the volunteers who participated in this study were all members of Advocates for Special People (ASP is the organization that initiated the program, therefore, there is a chance of bias in respect to the Transitional Skills program). Secondly, due to the decreased numbers enrolled in the summer months (down from Fall/Spring semesters by 75 percent), the Fall and Spring of 1997/1998 were evaluated. Lastly, due to the infancy of the program, a thorough evaluation is difficult. It would benefit TCJC and ASP, to evaluate the program using a longitudinal study. Ideally, in addition to the Texas Adult Basic Education exam, other tests will be added to gauge adaptive behavior. This not only will support the effectiveness of the program, but will also add validity to the evaluation process.

IMPLICATIONS FOR PRACTICE

For the purpose of this study, the implications for social work practice will focus on the fundamental values of the social work profession according to the National Association of Social Workers (NASW) Code of Ethics (1996). Emphasis will be placed on: 1) community organization, 2) community service and resources, and 3) applying the naturalization perspective to those with mental retardation.

The development of the Transitional Skills Program at Tarrant County Junior College is an excellent example of community organization. The methods of the ASP in program development can be examined by social workers in order to study strategies and techniques in the community organizational process. The NASW's Code of Ethics Section V, states "The social worker should assist the profession in making social services available to the general public." An expanded interpretation may include implementation of services not yet available.

Secondly, social workers can offer assistance to organizations, such as the ASP, by researching community resources and investigating policy issues that may affect the organization and its goals. This is reflected in Section VI, "Promoting the General Welfare", of the NASW's Code of Ethics; "The social worker should act to ensure that all persons have access to the resources, services, and opportunities which they require." Repetto and Correa (1996) concur stating "it is critical to empower families early in the lives of their children to advocate for programs that best meet their children's needs" (p. 11).

Lastly, Section II of the Code of Ethics emphasizes that the social worker's primary responsibility is to the client, making every effort to foster the client's right to self-determination. The normalization perspective reflects this value. Social workers can use the normalization principle in identifying and building on client's strengths. The normalization principle is reflected in Wolfensberger's (1977) definition as "letting the mentally retarded obtain an existence as close to normal as

possible" (p. 305). Rather than focusing on client and family deficits, the Transitional Skills Program works to place clients in situations that are "normal" and to help them and others emphasize normality rather than deviance.

CONCLUSION

In conclusion, persons with mental retardation deserve the basic fundamental rights and opportunities afforded to all individuals. Programs, such as Transitional Skills, offering academics, work readiness, daily living, and socialization skills, contribute to the fundamental rights and opportunities afforded to all individuals. Although the Transitional Skills Program is in its infancy, the research suggests an increase in the areas of independence, academics, self-esteem, and socialization skills. This supports Uditsky and Kappel's (1988) view of the benefits of post secondary education. Benefits include: "1) the possibilities for many relationships, 2) it is a societal valued experience, 3) it enhances self-esteem, 4) it improves employment possibilities through training and person contacts, 5) it is a normative experience with challenges expectations, and 6) it allows people to make a valued contribution" (p. 9). Facilitating program success not only benefits the individual with mental retardation on a micro level, but crosses over to the mezzo level by empowering families as advocates, and the macro level by offering employers trained, productive employees.

Further research must be conducted in order to establish validity and reliability of the Transitional Skills Program effectiveness. Originators and educators of the program should continue to research longitudinal studies to gauge program outcomes and benefits. Valid research data may support families in seeking funds from public and/or private organizations, since there is limited funding for individuals with mental retardation after the age of twenty-one. Families advocating for their child with mental retardation can benefit from funding in order to assist their child in achieving his or her maximum potential.

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Dissociative Identity Disorder: Do Recorded Case Studies Have A Bias?

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Abstract

Dissociative Identity Disorder (DID formerly known as Multiple Personality Disorder) describes a person with a) two or more distinct personalities and b) amnesia. This disorder has been a source of controversy in both the Psychology and Social Work fields since its inception first appeared in the Diagnostic and Statistical Manual of Mental Disorders in 1952. Research suggests that ninety-five percent of the subjects of these case studies are female in recorded accounts of DID. The purpose of this study is to discover whether there are any potential biases in established written case studies. This study of methodology will include a content analysis of a number of written cases in prominent Psychiatric and Social Work journals. Content analysis describes the coding and tabulation of information into patterns and themes. These findings may provide questions of whether there is a bias in the written accounts of DID. Further research ideas may be developed from this project's strengths and weaknesses.

Introduction

The Diagnostic and Statistical Manual of Mental Disorders (DSM) has developed specific guidelines to help mental health workers accurately diagnose psychiatric disorders in their clients. Since the DSM's inception in 1952, there have been four updates culminating in the current DSM-IV (A.P.A., 1994). Dissociative Identity Disorder (DID) (formerly known as Multiple Personality Disorder) is one such disorder that is identified in the DSM-IV. In keeping with the DSM-IV, DID is the term that will be used in this paper. The definition of DID includes:

"a) The presence of two or more distinct identities or personality states (each with its own relatively enduring pattern of perceiving, relating to, and thinking about the environment and self).

b) At least two of these identities or personality states recurrently take control of person's behavior.

c) Inability to recall important personal information that is too extensive to be explained by ordinary forgetfulness.

d) The disturbance is not due to the direct physiological effects of a substance (e.g., blackouts or chaotic behavior during alcohol intoxication) or a general medical condition (e.g., complex partial seizures) (A.P.A., 1994, p. 487)."

Most people are unaware that they have DID until they seek treatment (Smith, 1998). Clients are frequently seeking help for another psychological problem such as post-traumatic stress disorder (PTSD) or depression when DID symptoms become apparent to the clinician (Putnam, 1993).

Little work has been done to determine how widespread DID is. Piper

(1998) has estimated that one in ten Americans have DID. If the above figure is true, currently 26 million live with DID. Furthermore, 30% of this group live in poverty, having little access to adequate treatment (Piper, 1998). Finally, in another study in New Zealand with a sample size of 1,028 ($n=1,028$), it was found that 6.3% of the estimated population lives with DID (Mulder, Beautrais, Joyce & Ferguson, 1988).

The purpose of this study is to examine whether the distribution of DID in selected case studies exists equally among gender and races, and whether income and treatment protocols are consistent. This paper begins with a literature review and is followed by the study methodology. The results and discussion sections report on the findings.

Literature Review

Little has been written about DID in the 200 years before the 1980s. Pseudo-DID was first described by Paracelceus in 1646 in Europe (Bliss, 1986). From the 1700s to 1840 twenty-one countries had diagnosed cases of Pseudo-DID because clinicians considered it rare (Braun, 1986). By 1840 twenty-one countries had diagnosed cases of Pseudo-DID (Coons, Bowman, Kluft, & Milstein, 1991). From the 1800s to 1940 a mental illness was believed to have supernatural causes (Drew, 1988). (Schizophrenia was established as a mental illness in 1910 with fixed symptomatology.) Therefore, because schizophrenia symptoms are similar to DID symptoms, many DID patients were misdiagnosed (Drew, 1988). There were only seventy-six documented cases of Pseudo-DID in 1944 (Coons, Bowman, Kluft & Milstein, 1995). Compared to Shoop's 1996 estimation that one percent of the population has DID, the 1944 estimation appears low. Despite the scarcity of early published information, DID has become a highly researched phenomenon written about in journals and books since the early 1980s.

The historical review highlighted above speaks to the early documentation of DID. Despite these informal beginnings, there have been ongoing concerns about the usefulness of this disorder. Five important issues are presented below. In order, these issues include gender, race, income or socioeconomic status, and theories including treatments.

The majority of those diagnosed with DID are female (Lewis, Yeagar, Swica & Pincus, 1977) Caucasians from middle to upper-class backgrounds with histories of child abuse. Little research has been done to determine if females predominate in the dissociative disorders. When studies of DID are done using male subjects, they are usually in jails or in control groups. Before 1900, seventy-five percent of the DID cases were men, while today women are diagnosed with DID three to one (Spanos, 1996). Although it is true that females have been statistically shown to be at a higher risk of being a victim than males, this myth may keep men from talking about abuse experiences. Women are thought to be easier targets by perpetrators, perpetuating the myth that women must be taken care of under male dominated rules (Spanos, 1996). Therefore, men or boys may be fearful of talking about any

sexual abuse that has been perpetrated upon them for fear that they may be thought of as feminine. Instead, men may internalize their feelings and externalize their anger (Putnam, 1993). Given these circumstances, men who may have DID are not able to get adequate treatment in mental health clinics and end up in jails, prisons or drug rehabilitation centers (Snow, Beckman & Breck, 1996).

Race is another issue which has not been the subject of studies concerned with DID. Simpson (1995) states that the disproportionate racial breakdown among those diagnosed with DID only shows who is able to receive adequate treatment for a mental illness such as DID and who is not. Few of the case studies touch upon the racial issue in regard to DID. In fact, the majority of the case studies did not reveal statistics on race. Even in a prison setting, the ratio of Caucasians compared to other races was a minimum of three to one (Snow, Beckman & Breck, 1996). Despite the fact that the racial statistics are unevenly distributed, in actuality it seems that Caucasians are diagnosed with DID more than other races.

Even less research has been performed on the DID client's socioeconomic status. Simpson (1995) states that African-Americans and other races of lower income may not be able to invest the money or the time for long-term therapy. Lack of data brings up the question of how anyone manages to pay for extensive years of intensive psychotherapy without insurance or a financial support system.

Many theorists have attempted to explain why DID exists or does not exist. Pierre Janet (1886) was the first to believe that dissociation was a defense mechanism (Demitrack, Putnam, Brewerton, Brandt & Gold, 1990) caused by trauma (Mulder, Beautrais, Joyce & Ferguson, 1998). Although Freud believed that dissociation was caused by childhood trauma, he dismissed DID as a valid disorder. Braun (1986a, p. 5) stated that DID is "an inborn biological or psychological capacity to dissociate that is usually identified by excellent responsivity to hypnosis." Braun (1986b, p. 5) also stated that "repeated exposure to an inconsistently stressful environment" causes DID. Likewise, Spanos (1996) proposed that multiple identities can be understood as rule governed social constructions established, legitimated and maintained through social interaction. Basically stated, DID develops in response to society's pressures and stresses. Other theorists explain dissociation as a pathological disorder because there is no integration of thoughts, memories and actions into a unified consciousness of one person (Demitrack, Putnam, Brewerton, Brandt & Gold, 1990). Instead of a whole person or many people in one body, there is only half of a person. With so many discrepancies regarding beliefs about DID and its treatments, one wonders if it is not the clients in pain who are the ones paying for this dispute.

Another theoretical issue comes from Piper (1998), who states that there is no true definition of personality, alters, guest personalities or otherwise. According to Spanos (1996) there are several reasons for the dismissal of DID as a disorder. Two of Spanos' reasons include, but are not limited to, beliefs that the use of hypnosis can increase symptoms of dissociation and that there are too many childhood abuse statements without verification. In accordance with Spanos, Yeager (1997)

states that the stories of abuse should be verified. Piper (1998) questions why only one possible cause has been pinpointed as the reason for DID, namely childhood abuse. Piper's questions are similar to those by Spanos, but he also adds that symptoms appear after diagnosis instead of at the onset of treatment.

The final issue is that of treatment. According to Spanos (1996) those who treat DID clients are often accused of iatrogenesis. Iatrogenesis is the development of dissociative states during treatment by the clinicians. Many abuse accusations are not verified, and clients are urged to cut themselves off from their support systems - both family and friends. Patients often appear to get worse with treatment. One of the biggest complaints today is that a person receives treatment for six to seven years before receiving the correct diagnosis (Putnam & Loewenstein, 1993). Certainly, treatment tests the validity of the clinicians who made the first diagnosis, as well as the cost efficiency of therapy. Unfortunately, treatment is expensive, costing roughly \$14,400 per year (At six to ten years of outpatient therapy, the cost can run from \$86,400 to \$144,000 or more for completed therapy.) . Thus, society may begin to question the mental health profession altogether if there are too many unexplained discrepancies in diagnoses and treatments (Spanos, 1996).

Consequently, the controversy surrounding the legitimacy of the disorder and its treatments can leave the client at the mercy of the clinicians who are working with them. With only a 25% success rate (Piper, 1998) improved treatment methods are needed in the face of so many controversies.

The goal of most therapies treating DID is integration where all the personalities or alters are unified into a single entity. One of the first steps of treatment is to establish co-consciousness among the alters (All of the alters become aware of each other and they learn to communicate.) (Riggs & Bright, 1997). Integration helps eliminate the symptoms associated with DID such as auditory hallucinations (Ellason, Ross & Fuchs, 1996), and improves functioning in society (Putnam & Loewenstein, 1993).

Psychodynamic therapy and hypnosis are two popular therapies purporting to successfully put the client's dissociated state back into a whole integrated person (Ellason & Ross, 1997). Psychodynamic therapy refers to "mental or emotional processes or forces and their effects on behavior and mental states (Duncan, 1989, p. 551)." Clients are also taught coping skills (Riggs & Bright, 1997) such as building on the client's strengths versus focusing on the client's weaknesses (Barker & Herlache, 1997). Finally, there are other treatments such as expressive therapies, homogenous group therapy, behavioral modification (Putnam & Loewenstein, 1993) and family therapy (Barker & Herlache, 1997).

All the therapies mentioned above tend to view treatment from an individual perspective, viewing patients as isolated from their context. Barker and Herlache's (1997) idea of family therapy includes more than the individual in therapy. They include the family and the support system as well. Barker and Herlache advocate the immediate family, as well as the client, be treated by working on the day-to-day issues. Here, some of the goals are to teach the family prob-

lem solving techniques by building up a family's strengths and letting them see that what has worked previously will continue to work.

Methodology

The goal of this study is to determine if Caucasian women from middle to upper-class incomes are diagnosed with DID more often than those who are a part of other minority groups, such as African-American and or Mexican-American women. After initial viewing of the many case studies, articles and books, a number of questions emerged: Why are there more women diagnosed with DID than men? How can those with limited resources obtain seven to ten years of intense therapy? What is the race and socioeconomic makeup for those with DID? Do the variables from the previous question determine who will be diagnosed DID? What are the causes of DID? Are the present treatments working or is there a need to find more cost effective treatments? As a result of the above questions this study will focus on three primary questions:

- 1) Are the majority of those treated for DID only Caucasian women from middle to upper class backgrounds?
- 2) Do those diagnosed with DID have a history of child abuse issues?
- 3) Are the theories and treatments (e.g. psychotherapy, hypnosis, integration, etc.) helping clients in a cost effective manner?

Content analysis was used as part of this study. According to Rubin and Babbie (1993) content analysis breaks down key words or expressions into variables that can be checked for in each case study, article, and book. The variables that were checked included gender, race, income or socioeconomic status and theories, as well as treatments. After each case study, article and book had been perused and checked for variables, the statistics were compiled into tables. (Tables are included in the next section.)

Articles were retrieved from professional journals, books and the Internet relating to DID. Most of the articles included case studies containing background information such as the history, symptoms, treatments and controversies. There were a few articles concerning the controversy surrounding DID and the DSM-IV. Finally, seventy-three articles were researched for variables with 59% (n=43) validating case studies.

Results

The first question presented in the Methodology was divided into three parts. First, are the majority of those treated for DID only Caucasian women from middle to upper class backgrounds? Even in case studies comparing DID with other disorders, the other disorders were more evenly distributed by gender than those cases pertaining to DID. While few males were mentioned in the studies, they were usually incarcerated giving the impression that males with DID were found primarily in the criminal justice system.

Only 2% (n=1) of the forty-three case studies were done with a sample of males only. The other 66% (n=43) of the case studies demonstrated a mixed group, even though many of the mixed groups were the control group that were not diagnosed with DID. In the mixed groups the majority of participants were female, except for one case whose members were male. This study was done at a state prison with murderers and had a n=12, with 92% (n=11) males and 8% (n=1) female (Lewis, Yeagar, Swica, Pincus & et. al, 1997). Based on the data mentioned above, the following table was constructed.

Table 1 Gender Distribution

Female	Male	Both
13	1	27
13/43	1/43	27/43
30%	2%	63%

Only 5% (n=2) of the case studies did not give gender breakdown. In conclusion, most case studies include both genders.

The second part of the first question posed above asks about the racial element in the diagnosis of DID. Earlier it was stated that only Caucasians developed DID. Several studies were done in other countries, such as India and Italy, indicating that non-Caucasians also experience DID. Other case studies, mentioned within the examined case studies, acknowledged studies of DID in Turkey (Ellason & Ross, 1997), the Czech Republic (formerly known as Czechoslovakia), Brazil, Japan and Mexico (Coons, Bowman, Kluft & Milstein, 1991). Of the forty-three case studies, only 44% (n=19) gave any statistics demonstrating racial makeup. Eleven percent (n=2) of the nineteen cases show samples of Caucasians, while 68% (n=13) demonstrated multiracial samples. In the United States there were no case studies conducted with a strictly African-American or other minority group. In the mixed sample cases, Caucasians represented at least 59% of those studied.

DID is not a disorder that just affects Caucasians but a disorder that can and does affect all races worldwide. Although this study draws inconclusive evidence about the racial majority among those who develop DID, it does demonstrate that present studies reflect that the majority of those people studied in the United States are Caucasian. The following table was constructed in order to demonstrate these findings.

Table 2 Race Distribution Table

Caucasian	African American	Other	All	Unknown
2	0	4	13	24
2/43	0/43	4/43	13/43	24/43
5%	0%	9%	30%	56%

Only 44% (n=19) of the case studies gave any type of racial information. In conclusion, most cases were multiracial in nature versus Caucasian only, African-American only, etc.

The third part of the first question asked above concerns the socioeconomic status of those diagnosed with DID. Unfortunately, the statistics only reflect those who are able to seek and receive treatment. Only 44% (n=19) of the case studies gave any indication of income and/or employment, and 37% (n=16) demonstrate

employed and unemployed subjects.

In groups that were imprisoned or working at home, a rating of unemployment was given. Several studies were performed in private hospitals and clinics, leaving the reader with the assumption that the client must have adequate resources in order to receive treatment. No complete conclusions could be drawn from the case studies that were reviewed concerning whether clients are from lower, middle or upper class backgrounds. The following table demonstrates the income ratio for the data noted above.

Table 3 Socioeconomic Status

<u>Employed</u>	<u>Unemployed</u>	<u>Both</u>	<u>Unknown</u>
1	3	8	7
1/43	3/43	8/43	7/43
2%	7%	19%	16%

Of these case studies, 56% (n=24) did not discuss employment factors. Seven of these case studies mentioned employment but did not demonstrate the socioeconomic level of the individuals studied.

Based on the content analysis of the case studies, articles and books it can be stated that DID is caused by extreme abuse and stress during childhood. Extreme abuse in these studies included, but not exclusively so, physical, sexual, emotional and/or psychological abuse. Extreme abuse usually did not consist of a singular experience but of painful experiences that continued on a daily basis, sometimes ritualistically.

Although abuse issues were placed in the theories section of this paper, they will be demonstrated as a subsection of the theories in this section. Of the forty-three case studies, 81% (n=35) of these cases demonstrated some type of abuse. Of the forty-three cases, 70% (n=30) claimed physical, sexual and emotional abuse perpetrated on the victims. Physical and sexual abuse were shown in 12% (n=5) of the cases and 18% (n=8) stated DID was caused by unknown causes. Whether it was sexual, physical or emotional abuse that the DID person suffered is not as important as how it affected that person in the past as well as today. In conclusion, abuse that is painful, stressful and long term in duration during childhood appears to lay the groundwork for future problems.

The last question solicits information about theories and treatments. Despite the fact there is so much controversy around DID, there have been numerous theories developed about it. With each theory comes arguments for and against its clinical viability and, although the arguments are well discussed, the theorists often fail to test-retest case studies to prove their theories are correct.

Treatments such as hypnosis, psychodynamic therapy, integration, etc. only dealt with the individual client. Hypnosis alone created a major controversy between the believers and non-believers of the viability of the diagnosis of DID. Clinicians who believe in the legitimacy of DID and treat clients are often accused of

iatrogenesis. Such criticism does not help when clinicians admit to developing new alters or personalities during therapy (iatrogenesis). Problems with most therapies arose because they looked at the lone individual and did not include the family. Family therapy in the form of strengths perspective could help not only the DID affected person but the family including society in general. Barker and Herlache's (1997) Family Therapy and Jean Baker Miller's Relational Model (Riggs & Bright, 1997) may be the treatments of choice in the future.

Discussion

The primary purpose of this study was to discover if DID is a disorder of Caucasian women from middle to upper class status with child abuse backgrounds. The data collected indicated that more women have DID than men. In future studies it may be important to select groups that are more evenly distributed among the genders. It may be difficult to do this with limited access to such groups.

There were several case studies that involved college students. Using college students as a control group may also not be a valid test group because many times they are coerced to volunteer in a grade exchange. College students, like clients, may be too anxious to please their testers.

Finding case studies that reveal the gender, race, socioeconomic status and types of treatment may be difficult in the present. In the future, in order to help statisticians develop a clearer picture of DID, gender, race, socioeconomic status and types of treatment should be included in the case histories. This can be done easily by those who do case studies in the same manner as case studies are done with other subjects.

Finally, most of the literature focused on the debate concerning the validity of the disorder. Each writer gave an explanation of why it was or was not valid, usually contradicting the opposite point of view. In the future it might be more productive to take the focus away from determining the validity of the disorder and place more emphasis on finding solutions to DID, child abuse or PTSD.

By preventing child abuse through the education of parents, there should be a decrease in the number of cases of DID. If DID is a sociocognitive response then DID numbers will continue to increase, and it will be necessary to change the theories concerned it. Either way, those who have been diagnosed affect everyone who comes into contact with them, therefore making DID not only an individual problem but a systemic one as well.

For those who have DID now, it may be necessary to find adequate treatment in the face of diversity. Although integration was declared the most successful form of treatment only 25 % of those who achieve full integration are able to maintain integration for long periods. With only a 25 % chance of success with the present methods of treatment, it may be important to refocus on newer treatments that are currently being tried. Again, it will be important to receive treatment from a clinician who wishes to help the client no matter what diagnosis has been made.

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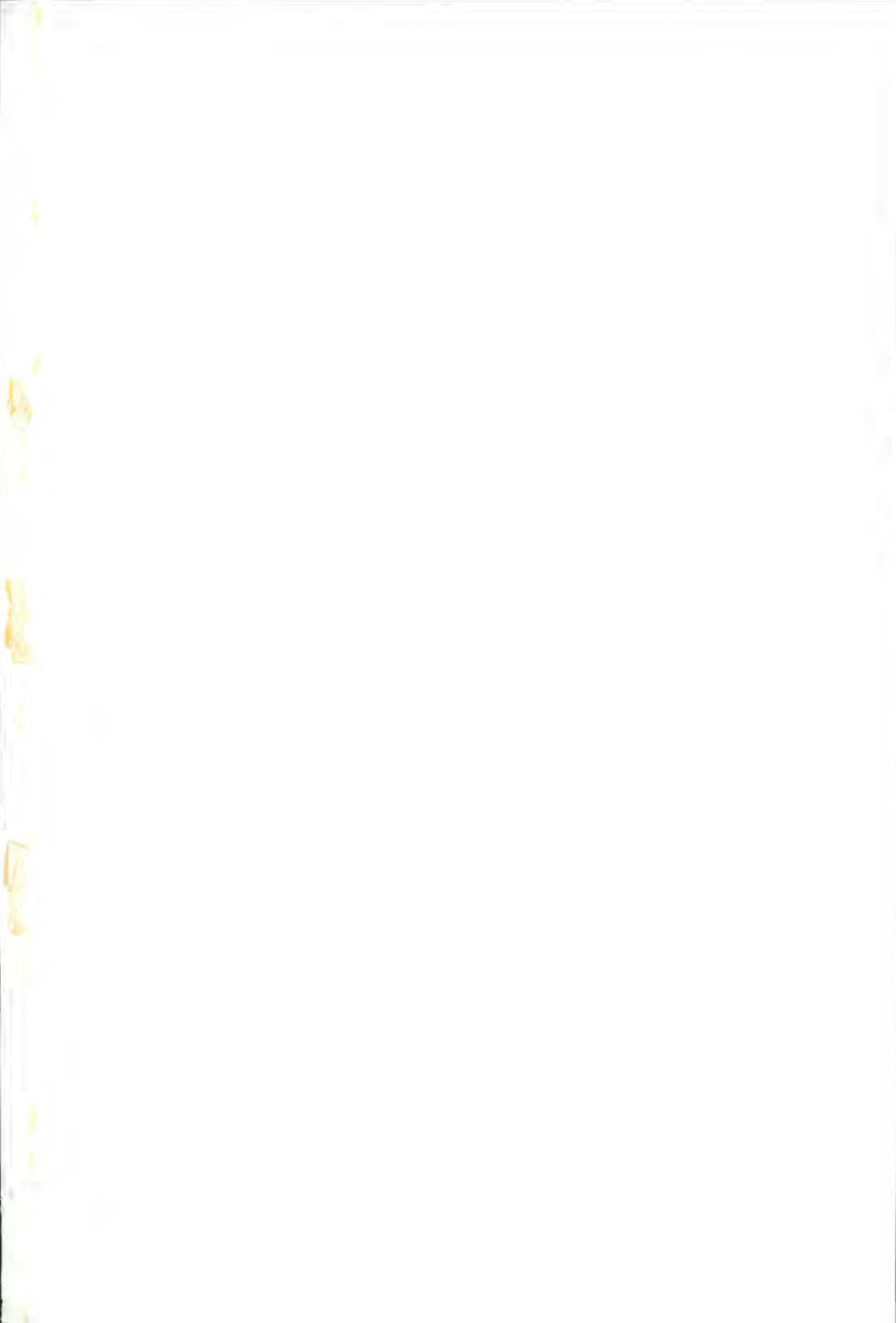
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