

The McNair Scholar s Journal

*of The University of
Washington*



**Vol ume V
Spr ing 2005**

THE MCNAIR SCHOLARS JOURNAL

UNIVERSITY OF WASHINGTON

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The Ronald E. McNair Post-baccalaureate Achievement Program operates as a part of TRIO Programs, which are funded by the U.S. Department of Education.

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From the
Dean of the Graduate School

It is my pleasure and honor to present the fifth issue of *The McNair Scholars Journal*. The papers contained in this volume represent a remarkable breadth of scholarship. They also represent a depth of scholarship that encompasses the best of what the University of Washington has to offer. The Scholars, their faculty mentors, the staff of the McNair Program, and all of us at this institution are justifiably proud of this work.

The McNair Scholars' Program honors the memory and achievement of the late Dr. Ronald E. McNair, a physicist and NASA astronaut. Its goal is to encourage young men and women to emulate the academic and professional accomplishments of Dr. McNair. One of the goals of the McNair Program is to encourage students who have been disadvantaged in their pursuit of academic excellence to attain not only a baccalaureate degree, but to continue a career in graduate education culminating in a doctoral degree. It is because of this goal that The Graduate School is proud to be a partner in this program. The outstanding undergraduate students who are selected to be McNair Scholars are actively recruited by our own and other graduate schools nationwide. They represent a coveted source of talent that will enhance the professoriate of the future and other leadership roles in our society.

The scholars whose work is presented in this volume will doubtless have many opportunities to pursue their post baccalaureate studies at outstanding institutions worldwide; however, I sincerely hope that the University of Washington will be fortunate enough to welcome some of these fine students into our own graduate programs. While we have benefited greatly from their presence as undergraduates, we will benefit even more by having them become our graduate student colleagues and possibly our future faculty.

Please accept my congratulations on this excellent publication.

Elizabeth L. Feetham, Ph.D.
Acting Dean of the Graduate School and Vice Provost

From the
Vice President and Vice Provost for Diversity

The McNair Scholars Journal is a demonstration of the fact that the McNair Program is providing an important opportunity for students to attain their goals of graduate school preparation through research. Many of these students would never have been afforded this type of opportunity without such a program. Additionally, a committed faculty mentor serves as a role model, and ensures an outstanding experience for students who are dedicated to the rigors of scholarship. I have heard both students and faculty speak of the special working relationships that evolve as student and mentor come together as researchers.

Former McNair students are making important contributions through their research in the academy and research centers that address the societal issues and scientific questions of our time throughout the nation. Many of these students attribute their success as researchers and scholars to the McNair Program. Finally, these essays in the fifth edition of the McNair Scholars Journal are evidence of the University of Washington's goal to insure our diverse student body a quality academic experience.

Please join me in thanking the faculty, staff and students who came together through the McNair Scholars Program and made this journal possible. It is proof of the amazing things that can be accomplished through collaboration.

Nancy 'Rusty' Barceló, Ph.D.
Vice President and Vice Provost for Diversity

From the
Director

I am delighted to present the fifth edition of the McNair Scholars Journal to our reading audience. The essays and abstracts included in this volume are the culmination of work carried out by our scholars with a faculty mentor in their field of study during the 2004-2005 academic year and in the summer of 2004. The academic year and summer research component for McNair Scholars at the University of Washington has two specific goals: First, engage students in the research enterprise at the undergraduate level, so they develop the analytical and methodological skills, academic sophistication, and confidence that will make them successful students in graduate school. Second, provide students a unique opportunity to publish their undergraduate research, so that the scholars gain an early understanding of the critical role that publishing will play in their academic careers. In this respect, the McNair Journal is a key component in the preparation of our scholars for careers in research and teaching.

The excellent research contained in this volume would not be possible without the involvement of dedicated faculty on the UW campus and elsewhere who guided our scholars during their research experience. As always, I want to extend my gratitude to the faculty for their support of our students and for encouraging them to pursue a path towards graduate education. Their guidance and support has allowed our students to grow in meaningful and significant ways, while giving our scholars the foundation to enter graduate school with confidence and solid research experience.

Our journal involves a number of people who work behind the scenes to prepare the final draft for publication. I would like to extend my appreciation to the UW McNair staff, Associate Director Steve Woodard, and our graduate student staff, Alyson, Rahel, Zakiya, and Marc, for their commitment and dedication to the McNair mission and for bringing this project to completion. They are an asset to the program and have been instrumental in preparing such a high quality journal.

On behalf of the entire McNair Staff, I sincerely hope that you enjoy reading the fifth edition of the McNair Scholars Journal.

Dr. Gabriel E. Gallardo
Director, McNair Program

Journal Disclaimer

While the McNair Program Staff has made every effort to assure a high degree of accuracy, rigor and quality in the content of this journal, the interpretations and conclusions found within each essay are those of the authors alone and not the McNair Program. Any errors or omission are strictly the responsibility of each author.

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Volume V

Spring 2005

Contents

Models of response following the Argentine economic crisis of 2001: los piqueteros, and the neighborhood popular assemblies of Buenos Aires <i>Rick Aguilar</i>	1
Nondestructive Sensing – Dielectric Spectroscopy <i>Leslie Edward Byrd II</i>	21
Recognition of Famous Stimuli: Can There Be A Building Inversion Effect? <i>Lorena Chavez</i>	29
Understanding Racial Biases in Adoptive Parents <i>Madalene Day</i>	45
Balancing College Aspirations and Cultural Expectations Among Mexican Female High School Graduates in Manson, Washington <i>Bárbara Guzmán</i>	57
Behavior Signatures in Youth Sport Coaches <i>Nhi Nguyen</i>	81
Lessons from Nature in the Design of Novel Materials <i>María D. Rodríguez</i>	91
Public vs. Private Schools: Addressing the Issue of Academic Disparities in the context of college readiness <i>Derek White</i>	109

Models of response following the Argentine economic crisis of 2001: los piqueteros, and the neighborhood popular assemblies of Buenos Aires

Rick Aguilar

Introduction

Popular protest to neo-liberalism, fiscal and political crisis, as demonstrated in this case, is not a new occurrence in Argentina or in Latin America. Though some of the forms of response in the instance of the 2001 Argentine crisis are reminiscent of prior social movement activities, it is worth exploring this recent case for its innovative features within the historical context of social movement activity in both Argentina and in Latin America. It is the intention of this analysis is to see what is consistent and what is new or different about the movements, which emerged recently in Argentina, in comparison to those activities and methods of protest of earlier examples.

A few interesting and important examples of contemporary social mobilization are the different social movements that emerged in response to economic crisis in Argentina in December 2001. The gravity of the situation quickly saw an explosion of protest and civil organization throughout the districts of the capital, as in the rest of the country. Response to the crisis quickly propelled the *piquetero*, or picketer, movement into action and brought about the formation of numerous neighborhood assemblies. While the crisis clearly served as a catalyst resulting in the activation of these movements and their various activities, the development of these movements is less apparent. The aim of this essay is to provide an examination of the conditions leading up to the crisis that will help to explain the wave of popular protest demonstrated in this case. Specifically, the purpose of this investigation is to: 1) provide a general discussion that examines the outlined modes of response, in times of economic and social crisis, to those of the past; 2) discuss and briefly explain the development of these movements to theoretical concepts defined in the literature of social movements.

Following an explanation of the theoretical concepts employed to explain the emergence of the specified social movements, this essay begins with a short summary of the crisis that sparked the various responses. The succeeding two sections focus on the formation and activity of the *piquetero* movement and the neighborhood popular assemblies, which also include a closer look at communal gardens of the neighborhood assemblies. The final portion ends with conclusions.

Theoretical Discussion

A number of theories attempt to explain the emergence of social movements, and though the utility of the “new social movements” framework has been generally applied in Latin America, debate over its assertions continue (Foweraker, 1995). According to Joseph Petras (2002), while cities have become the nucleus of the latest social movements, “new social movements” have come to be defined as “cultural and ‘citizen-based’ civic movements concerned with democracy, gender equality, and identity politics.” Indeed many of these elements characterize this case. Because contemporary social movements contain such diverse components, no one theory appears to be able to explain popular mobilization in its many facets. Therefore, the application of various theoretical elements and their combinations may be applied to explain mobilization. The utilization of theoretical concepts referred to as “opportunity structures”, “mobilizing structures” and “cultural framing processes”, including the application of “historical-structural” elements are used to explain mobilization in this case.

The first of the three aforementioned structures, “framing processes” are described as the collective processes of interpretation, attribution, and social construction that mediate between opportunity and action (McAdam, et al, 1996). This concept is used in the contexts of some social movement analysis to show how shared experiences, that result in collective protest of shared grievances, are tied to the patterns of perception or interpretation employed by social movement participants and organizations, as a collective (Epstein, 2003). Secondly, “political opportunity structures” refer to precise instances by which chief actors of a movement evaluate government weakness in an effort to determine the probability of being able to affect bureaucratic structures. Additionally, and imperative to this equation, there must exist an abundance of demonstrators ready to mobilize, having pertinent cultural framing. Thirdly, mobilizing structures involve associations by which individuals unite and partake in cooperative activity both traditionally and unconventionally. Along with the factors already discussed under increased opportunity, obtainable mobilizing structures may also rely on a mix of prior demonstration as well as the threat of renewed rebellion, and the likelihood of versatile arbitration (Epstein, 2003).

Lastly, a historical-structural approach is used to explain popular protest in this example. Susan Eckstein (2001) asserts that the “dynamics” of social movements in Latin America beginning in the 1990’s can be explained by utilizing a “historical-structural” approach. She maintains that this perspective is particularly beneficial because interactions between macro political, socioeconomic and cultural

dynamics and among human relations (in which hardships are encountered) are encompassed by this intermixed formula (2001). The activity of institutions as well as pertinent historical circumstances and cultural procedures serve to illuminate the relationship that structure has upon both agency and culture and how collective resistance is shaped in Latin America. Considering historical and structural factors (social, political and economic) is certainly relevant in explaining the emergence of the outlined movements. While this approach can be applied to explain civilian mobilization, a historical structural perspective in addition to the said theoretical structures of cultural framing, political opportunity and mobilization can also be utilized to augment our understanding of the neighborhood assembly and piquetero phenomenon.

The Crisis

In December of 2001, Argentina's economy collapsed following an extensive devaluation of national currency stemming from its neo-liberal fiscal agenda and the weight of its massive debt. The crisis sent the country's growing economic and social problems skyrocketing, pushing the level of unemployment, hunger and crime to an intolerable point. And though the severity of the crisis has had an extensive impact across class lines, it has been the middle and popular sectors of the population that have most acutely felt the effects of the disaster.

In Buenos Aires, December 19 and 20 marked the height of the turmoil and the beginning of many civilian demonstrations, when thousands of incensed citizens took to the streets in one of the first *cacerolazos*.¹ A freeze on bank accounts, referred to as the *corralito*², combined with a general air of anger and dissatisfaction with the government sparked the protests that resulted in the ousting of two presidents in less than two weeks.

Due to the breakdown of traditional political and economic structures, citizens and activists were forced to find their own survival solutions without protection or aid from the government. Consequently, a range of responses to the economic emergency took shape in the form of various protest and self-help activities. Community vegetable gardens, bakeries, soup kitchens, food canteens, large-scale public protest and assembly, worker factory takeovers, barter clubs, and cooperative bank accounts characterize the work of the movements that immediately and spontaneously arose following the tumultuous events of December 2001.

¹ A traditional form of Argentine protest involving the clattering of pots and pans.

² "The little fence", literally translated. The freeze on bank accounts was an attempt to stem massive capital flight.

This massive upsurge of popular activity and grassroots organizing gave rise to the piqueteros and the neighborhood popular assemblies, which soon emerged as perhaps two of the most powerful movements in Argentina.

Los Piqueteros

Some Background

In 1994, the earliest picket³ began in an industrial city in Patagonia when the main base of employment was suddenly stopped (Chejter, 2004). The event marked the beginning of the piquetero movement in Argentina (although the movement's origins are truly the product of the neo-liberal policies that have ravaged Argentina's working class). Silvia Chejter (2004) affirms that the birth of the piquetero movement began in the 1990's when the effects of structural reform, privatization and other government neo-liberal policies resulted in the closure of several factories in the provinces of Argentina. While the foundation of the movement clearly began in the years prior to the economic crisis of 2001 as a response to neo-liberalism, Edward Epstein (2003) asserts that "the emergence of piquetero communities should also be seen as one particular response to the economic crisis." Clearly, all of these factors were responsible for fueling the flames of the movement, pushing the piqueteros to a new level of mobilization. By 2002, with poverty skyrocketing and unemployment reaching record levels⁴, the piqueteros had undoubtedly become the foremost street activists in Buenos Aires.

The piqueteros are essentially out of work or poorly paid working class citizens, displeased with mass unemployment, deficient salaries and federal economic policies (Trigona, 2002). Over the years, the piqueteros have become increasingly effective in publicly

³ Consequently, an important artery critical to local business was blockaded following government failures to fulfill promises to workers. Picketers later obtained financial aid and other concessions from the regional government when a picketer was killed in an instance of police oppression (Chejter, 2004).

⁴ Unemployment reached a national contemporary record number of 21.5% of the labor force by May 2002. The figures would have been higher by October had it not been for federal relief subsidies dispensed to some unemployed workers. Hence, as of October 2002, 54.3% of the population of greater Buenos Aires was subsisting below the official level of poverty according to INDEC, the government statistics office. Moreover, nearly half of those mentioned were described as so extensively poverty stricken that they could not manage to buy food to sufficiently feed themselves. Poverty levels for this locale were the highest in recorded history (Epstein, 2003).

demonstrating their dissatisfaction with the government, as has their ability to organize collectively and en masse. Another strong piquetero quality includes their notable collaborative leadership abilities (Burbach, 2002). Undoubtedly, the growth of the piquetero movement is, in part, a result of the exceptional leadership that has enabled the movement to negotiate with the Argentine government, and its capability to successfully organize and collaborate with other community organizations and individuals, such as the MTD⁵ and with some trade unions.⁶

Protest and Demand: A Methodology

The piqueteros are best known for their style of protest. The short-term obstruction of traffic on major roadways, a tactic known as *cortes de ruta*, is the form of political activity for which they are most famous (Epstein, 2003). The first major piquetero protests began in the interior of the country, but by 2001 the *cortes de ruta* strategy had extended to the whole of the nation (Burbach, 2002). Concerted efforts by piqueteros and by segments of trade unions to successfully coordinate widespread strikes and extensive freeway jams, impeding state and business activity, had reached the capital by September 2001 (Petras, 2002).

The roadblock strategy is also a common form of rebellion in other Latin American countries. During the early 1970's, middle class protestors caused traffic jams in opposition to Salvador Allende's policies favoring Chile's lower and working classes (Eckstein, 2001). In Bolivia, where the highway system is especially underdeveloped, road blockages have been extremely potent (Eckstein, 2001). In Argentina, road blockade demonstrations ultimately became the favored method of promoting employment and social welfare appeals (Villalón, 2002). The piqueteros use of this method appears unparalleled in its extent and success in extracting government concessions in Latin America. The following exemplifies one such protest occurring at the height of the piquetero movement. In August 2001, following months of violent encounters between piqueteros and state police, unemployed groups

⁵ The Unemployed Workers Movement (*Movimiento Trabajadores Desocupados*) or MTD, a highly politicized and socially active grassroots organization, is one such organization directed by many unemployed piqueteros in conjunction with numerous community members from various districts of the capital (Petras, 2002). To deal with the problems of unemployment and poverty, the MTD have developed alternate solutions that include the operation of low cost cooperative bakeries, educational workshops and free communal kitchens and snack rooms (Trigona, 2002).

⁶ Details of this paragraph to be elaborated upon in the following pages.

totaling more than one hundred thousand launched an extremely coordinated countrywide mobilization that closed down over three hundred freeways in Argentina (Petras, 2002). The episode struck a debilitating blow to the once untouchable commercial sphere, bringing about an economic standstill. Under pressure, the government provided thousands of short-term base pay jobs, food allotments, and other allowances in lieu of the circumstances.

While the piqueteros were able to remain intact as an autonomous group, they were also surprisingly able to attract a broad range of citizens of various social classes, the business community and some human rights groups, ready to support and frequently collaborate with the movement (Petras, 2002). Even the poverty-stricken, the regularly unemployed poor and their relations who have seldom participated as an organized and politicized force have been mobilized by the piqueteros (Epstein, 2003).

The challenging methods of protest employed by the piqueteros are intended to gain the attention of the bureaucratic powers that be. The aim of the piqueteros is to persuade politicians so that the government will heed their demands and address their immediate needs. For this very purpose, the threat of roadblocks to elicit services from the government is exercised as an essential “bargaining chip” by piquetero leaders. Any kind of employment or fiscal assistance, either in the way of food grants, jobs, or temporary financial aid agreements, often in exchange for public service, is what is commonly requested. The Jobs Program or *Programa Trabajar* and the more recent and comprehensive Program for Unemployed Heads of Family (*Programa Jefes/Jefas de Familia Desocupados*) is one such federal alleviation plan in which the piqueteros have requested inclusion, as current widespread unemployment has swelled to peak levels.

A New Kind of Clientelism?

Piquetero bargaining for government aid and role as political voice for the unemployed is reminiscent of the participatory politics of labor unions. In certain circumstances, the political tactics and the latest popular mobilizations of unemployed in and around the capital of Buenos Aires are similar to the methods associated with the Peronist-dominated General Confederation of Labor (*Confederación General de Trabajo*) or CGT (Epstein, 2003).

As the piqueteros succeed in establishing preliminary negotiations with local politicians, thereby securing state benefits and other concessions, some questions regarding the course of the movement are beginning to unfold. Specifically, does the movement run the risk of

becoming co-opted into a kind of *clientelistic*⁷ partnership with the state, as has occurred in the past with traditional Argentine labor coalitions such as the CGT? How do piquetero arbitration methods compare to those of the CGT in the past? And in what ways are the piqueteros similar to the CGT? In what ways are they different or unique? Epstein (2003) states that, in the fashion of prior coalitions, the various newly arisen heads of the piquetero movement currently see themselves as the “political heirs” of traditional Argentine trade unions. Additionally, the subsequent style of arbitration, with the kind of government typified in Argentina, is well understood or recognized by the piquetero community because it is precisely patterned on the sort of negotiation that Argentine coalitions have employed in the past (Epstein, 2003). But it is the distinct development and course of this phenomenon that make it unique, in regard to the custom of participatory politics and political struggle in Argentine history. The first distinction is that the outbreak of demonstrations in response to the crisis was not coordinated by the labor unions, as might be expected (Villalón, 2002). By denotation, the unions, particularly ones like the CGT, were historically the governing establishment responsible for representing and safeguarding the working class, by upholding the labor and social interests of its members. Instead, the piqueteros, a non-state sanctioned, protest organization became the representative body of the working class. Furthermore, political parties, the other conventional establishment, also failed to both coordinate roadblocks and to represent civil welfare issues and grievances. Consequently, it was the piqueteros who emerged as the mouthpiece of the working class and the new medium for voicing civil and labor pleas (Villalón, 2002).

In most cases, piquetero leaders that have succeeded in acquiring spaces in state assistance programs for some of their members have utilized such access to gain direction over the mandatory labor subsidy of all program recipients (Epstein, 2003). However, such authority has been criticized as amounting to the “material basis” for what has been conveyed as “a new version of political clientelism.” While some piqueteros could be designated as clientelist, owing to the mutual obligatory relationship required of members, the piquetero arrangement appears characteristically distinct from previous structures on account of

⁷ A traditional practice in which a handful of representatives, who are separated from their constituents and willing to compromise the movement, are promised favors or bribes by political leaders in exchange for their support and allegiance. Dating back to the 1940’s, labor coalitions were notoriously corrupted by the Peronist Party (Burbach, 2002).

its stronger emphasis on active community cooperation and internal approaches to egalitarian decision-making (Epstein, 2003).

Within this context, the stress on community participation, *horizontal*⁸ structures of participation and the use of shared resources in the following manner appears to be unique to the piqueteros. By pooling portions of beneficiary resources like Programa Trabajar, a succession of self-planned relief services such as communal gardens, soup kitchens, health clinics and other community services have been funded in some poor neighborhoods of Buenos Aires (Delamata, 2004). Likewise, the establishment of “assemblies” or an internal method of decision-making by piqueteros has created novel forms of horizontal collaboration and delegation according to Laura Chrabolowsky (2003). Theoretically speaking, the assemblies function as instruments of direct democracy that work to build an official structure of representative leadership which presumably allows for full collaboration of all group members (Delamata, 2004). In practice, however, the extent of participation can vary some depending on internal dynamics between group members (Delamata, 2004). Nonetheless, at present, the piqueteros have succeeded in changing the role of participatory politics by creating a more inclusive mode of cooperation, while also managing to assist the marginalized poor in organizing community associations to cope with poverty and social grievances (Chrabolowsky, 2003).

Also, the manner of piquetero bargaining, though participatory, differs from CGT politics of the past. According to Roger Burbach (2002), in an attempt to prevent a “clientelistic” relationship from forming between the piqueteros and the government, negotiation is conducted in public meetings. By this account, it appears that movement leaders remain committed to their communities. Though, the fact that members of some piquetero groups have obtained management over nationally funded relief programs designed for its poor unemployed members questions the character of this relationship. Epstein (2003) states that obtaining this kind of admittance was quickly seen as essential to the continuation and potential enlargement of the establishment by leading piquetero group heads. Still, it can be argued that the nature of the piqueteros reciprocal relationship constitutes a clientelistic relationship. At this juncture it is clear that the piqueteros have forged a

⁸ Horizontal structures of participation refer to a system of government where institutions and representatives are monitored and controlled by a separation of powers, checks and balances and due process (Perrozutti, 2002). In this case, horizontal organization refers to equal participation and mediation by group members, where no centers of formal authority exist.

new type of clientelism, where in exchange for a measure of cooperation they receive state support and recognition as an autonomous political force. In essence, the piqueteros have become an institutionalized or state sponsored protest organization, given the role of representing a large segment of the working classes in what has otherwise been the traditional role of labor unions.

Regardless, the current relationship between the piqueteros and the government is certainly developing in ways that may alter the course record of some segments of the movement in the near future. Moreover, it should be noted that not all piquetero groups are ideologically unified with regard to the degree of government cooperation or participation taken up by some portions of the movement.

Explaining the Movement

Utilizing a combination of analytical classifications, (based on studies by McAdam, McCarthy, and Zald 1996; McAdam, Tarrow, and Tilly 1997; Tarrow 1998), Epstein (2003) asserts that piquetero mobilization can be explained using the following theoretical concepts of “cultural framing processes”, “political opportunity structures” and “mobilizing structures” or organizational resources. Explained respectively, mobilization in this case was motivated by: 1) a shared perception that came to view government leadership and economic policy as the responsible agent of socioeconomic problems. The growing success of piqueteros leaders to organize and to induce concessions from the state worked to both attract supporters and to solidify the objectives of the movement; 2) the extremely unstable, degrading political climate, which produced openings for the emergence of “new forces clearly present” by December 2001; 3) the piqueteros history of protest, bargaining capabilities and ability to induce negotiations and procure concessions by pressuring the government with increased roadblocks exemplifies this final principle.

It becomes easier to see how these structures and the detrimental magnitude of the fiscal disaster on Argentine society sparked such extensive responses to the crisis. The given state of the economy, alone, appears to have been a sufficient condition for mobilization. Indeed, protest is predominately initiated by economic circumstances and associations (Eckstein, 2001).

It appears that a major function of these structures and of other social movement theories is to attempt to determine movement behavior as a response to the risks associated with various lines of action. Eckstein (2001) states that movement responses are viewed by resource mobilization and rational choice theorists as reasonable replies to the

“costs and rewards” of diverse courses of action.⁹ In sum, and as outlined above, movements are dependent, principally, upon opportunities for collective action, resources, and group organization according to resource mobilization and rational choice theorists.

Neighborhood Popular Assemblies

Genesis of the Movement

Like the piquetero movement, the background factors that set the stage for the economic crisis resulting in the formation of neighborhood assemblies (or NA's) can be traced back to historical-structural factors, like the breakdown of representation and the neo-liberal economic model. Also, what Eckstein (2001) calls a “culture of resistance” adds another crucial element to this equation. Argentina's robust history of collective mobilization, especially its more robust history of independent popular mobilization and coordination, support this idea (Mainwaring & Viola 1994). The history of civilian contention beginning with the human rights movements¹⁰ of the early 1980's, including the piquetero movement, are responsible for increasing the potential for popular protest, thereby accounting for what has recently enabled Argentine citizens to become mobilized as a politicized force (Villalón, 2002).

The structural economic reforms of the 1990's (privatization, trade liberalization, deregulation, corruption and the downsizing of the welfare system), while beneficial to the privileged few of the elite class, had adverse effects for the popular sector. Clientelism and other forms of favoritism under this economic model contributed in distancing or excluding the popular sector from participating in the formation and implementation of policy. Many citizens no longer found representative institutions like unions and political parties to be useful as protectors of

⁹ Resource Mobilization Theory stresses the ways in which movements are shaped by and work within limits set by the resources (especially economic, political and communications resources) available to the group and the organizational skills of movement leaders in utilizing those resources. It focuses on direct, measurable impacts of movements on political issues, and less so on the expressive, ideological, identity-shaping and consciousness-raising dimensions of movements. Rational Choice Theory is a way of looking at deliberations between a number of potential courses of action, in which the costs and benefits of disobedience are used to decide which course of action would be the best to take. While best used to explain defiance at the individual level, it cannot explain the ways in which mobilization is formed at the collective level.

¹⁰ Chiefly the human rights group *Las Madres de la Plaza de Mayo*, whose formation began as a response to atrocities committed by Argentina's military dictatorship between 1976 and 1983.

their rights or interests. Meanwhile, the ever-worsening milieu of social and economic deterioration coupled with the high level of corruption among politicians and organization representatives produced an increase in discontent, further discrediting these institutions and their leaders. As a result, a wave of political discord gradually developed. Throughout the country, disadvantaged groups began to demonstrate their dissatisfaction with their deteriorating rights in the political process. Consequently, following the crisis, community protest and the emergence of the neighborhood movement was somewhat unexpectedly initiated by a composite of employed and unemployed citizens (from the lower, working and middle classes) beyond unionized workers or political factions rather than by unions or political parties (Villalón, 2002).

Though the NA's of Buenos Aires are unique in terms of origin and particular organization, they are not novel to Latin America. Nor are the NA's the first example of massive protest and organization (in response to austerity and other welfare and rights issues, beyond limited inter-household collaboration) by convening groups of community members in Buenos Aires.¹¹

Some neighborhood associations in Brazil have origins dating back to the 1940's (Mainwaring & Viola 1994). These older associations expanded steadily as autonomous organizations from the 1940's until 1964 when Brazil's government became a military dictatorship (Fisher & Kling, 1993). Following military rule, NA's quickly made a comeback in the urban areas of Brazil (Fisher & Kling, 1993). In just one of São Paulo's eight notaries, 470 new NA's had registered between 1977-1987, and in the decade following 1970 well over half of Belo Horizonte's 534 NA's were established (Avritzer, 2002). The NA's continue to be widespread, active organizations in the urban communities of Brazil.

Neighborhood Assemblies in Actuality

Many of the indignant citizens who publicly mobilized in December 2001 became the very community residents who continued to demonstrate shared grievances by taking advantage of the opportune situation to form neighborhood assemblies, or *asambleas barriales*, in an attempt to resolve and voice common problems and objections. Directly following the *cacerolazos* at the height of the protests, over 200 neighborhood popular assemblies promptly sprung up in the capital, including greater Buenos Aires (Trigona, 2002).

¹¹ The National Housewives Movement is one such example. In the early 1980's, extensive protest to such issues erupted in various cities of Argentina including Buenos Aires (Walton & Seddon, 1994).

In general, assembly participants are middle and working class men and women from a range of occupational backgrounds, between the ages of 20-65 (Briones & Mendoza, 2003), who want a reformation of the state. The NA's repudiate the current state of political leadership, including the IMF and want an end to the government's neo-liberal policies, corruption and demand the seizure of foreign venture and capital in the nation (Henshaw-Plath, 2002). Though the NA's have voiced demands towards the federal government, especially in conjunction with piquetero protests, their primary focus and influence is in effect limited to local issues at the community level.

NA members from various districts of Buenos Aires meet and demonstrate in busy public spaces like plazas or on street corners (Briones & Mendoza, 2003). Egalitarian procedures of decision-making based on the more extreme piquetero model of participation were immediately adopted by the NA's (Briones & Mendoza, 2003). These substitute civil organizations were formed with the intention of creating a framework of horizontal participation designed to address their respective needs and interests (Villalón, 2002). The NA's are considered autonomous political institutions because they are not supported by any greater external institution, such as the state, and seek to influence government procedures (Briones & Mendoza, 2003). Mainwaring & Viola (1994) maintain that, historically, NA's retain a greater level of sovereignty due to their low dependence on state resources. In addition, current emphasis on community participation and cooperation among NA's is greater now than in the past, generally speaking (Mainwaring & Viola, 1994).

NA's operate and convene at three levels. Conferences are held at the community or *barrio* level, inter-*barrio*, and at the national level (Henshaw-Plath, 2002). At assembly meetings or *asambleas*, proposals are introduced and voted upon. Normally, these include strategies to address local problems and political grievances, such as coordinating solidarity protest activities with piqueteros in denunciation of state economic policies (Henshaw-Plath, 2002).

The neighbors who partake in *asambleas* also separate themselves into task groups that meet at different times apart from the leading assembly. Aside from discussing neighborhood matters the task groups help in the operation of soup kitchens, address job creation, organize community vegetable gardens, and coordinate a host of other activities. (Briones & Mendoza, 2003).

Gardening for Survival

The establishment of vegetable gardens, or *huertas* is one such example that illustrates the NA's innovative, unconventional approach to

coping with the hunger dilemma produced by the crisis. Compared to those traditional survival activities frequently adopted in Latin America, the huerta movement appears innovative in regard to its approach. The soup kitchen, or communal kitchen, is one example of a conventional survival strategy widely adopted to combat hunger caused by economic hardship in Latin America.¹² However, the maintenance and effectiveness of soup kitchens has been limited by its inability to produce crucial resources without external assistance. Community kitchens have historically depended upon resources from institutions (such as the state or church). Soup kitchens, above all other collective self-help activities, were probably the most dependent on external aid (Oxhorn, 1995). Moreover, the sufficient needs of communal kitchens have never been satisfied by the assistance provided by outside organizations (Oxhorn, 1995). Community urban agriculture on the other hand, while not a comprehensive solution to hunger or a means of satisfying every dietary necessity, can provide food directly, without the reliance of external resources from the state or church. In this respect, the huertas are a departure from classic survival strategies and evidently a more direct and effective self-help method that can at least curb hunger partially.

Urban gardening by NA's (and piquetero groups) began as a kind of survival strategy or response to the appearance of extensive hunger for the first time in Argentina (Blackwell, 2002b). Neighborhood vegetable gardens began to emerge around the capital not long after the height of the crisis. Citizens began communal gardens on small parcels of land at home, in empty plots of public land, in schoolyards, public parks and in various other places. The sizes of the gardens vary, though as an indicator, the size of one public garden in a park in the San Cristóbal district of the capital measured around 500 square meters (Blackwell, 2002a). Volunteers from the particular neighborhoods manage the huertas. Gardens run by piqueteros organizations such as the MTD operate in a similar fashion, working both in conjunction with NA's providing food to the community and to the MTD's own web of supporters and joint food banks (Blackwell, 2002a).

Urban gardening, designed to ease food shortages and nutritional problems, has been adopted in some countries of Latin America prior, though the establishment of urban gardens in this context appears to contain some unique differences to former cases. Cuba's adoption of urban agriculture as a product of economic dilemma offers a close example to the Argentine circumstance, as well as a good point of

¹² Community kitchens began in Lima, Peru in 1979 and thereafter in Chile, Bolivia, and Brazil in response to economic austerity (Walton & Seddon, 1978).

comparison for illustrating the novel aspects of the Argentinean case. In both countries the implementation of urban gardening occurred in response to economic crisis. However, the huerta movement in Argentina differs in that it arose as a public response, consequently developing as a grassroots activity, apart and without the support of the federal government.

In the case of Cuba, the nation experienced a serious food crisis when it lost the support of its financial benefactor following the collapse the Soviet Union in 1991 (Kovaleski, 1999). In response to this emergency, the government assisted communities in implementing a system of commercial urban agriculture. State urban vegetable gardens were established in empty parcels in Havana and in other cities and towns across Cuba (Kovaleski, 1999). In 1998, Havana residents harvested more than 540,000 tons of food for consumption, with some neighborhoods generating up to 30 percent of their food (Kovaleski, 1999). Cuba has also imported this model of urban agriculture to Venezuela (Ceaser, 2003). Venezuelan president Hugo Chavez recently embraced this idea, implementing a system of state-run gardens in the cities of Venezuela (Ceaser, 2003).

Conclusions

The contemporary wave of civil movement, discussed here, entails an examination of the politics that have seemingly distanced Argentine citizens from representative institutions, including questions concerning the future course of civil society in Argentina. In the recessive years prior to the economic crisis, the Argentine political system has increasingly separated itself from the societal needs and concerns of the nation. The tendency of institutional and political leaders to disregard the demands of its constituents, and the government's failure to adequately address and assume liability for the problems incurred by the crisis, have significant bearing upon the upsurge of social movements in Buenos Aires.

Society's immediate reply to the socioeconomic crisis and to the closing of political affiliation was to abandon the country's representative institutions and to create alternative forms of participatory organizations that would have greater direct decision-making power and influence in the local and national bureaucratic sphere. The extent of anger, frustration and discontent in this climate, especially over the poor economic and political circumstances that led to such rampant rates of poverty and unemployment, became so pervasive that it impelled sectors of the population to engage in collective action that otherwise would not have. Consequently, this situation, which hyper-activated the piquetero

movement and “instantaneously” generated the establishment of neighborhood popular assemblies, fueled civil society’s demand for social welfare and political reformation. Yet it appears that the movements have quickly diminished or have become increasingly clientelistic, ironically.

Piquetero protest activities, notably the use of roadblocks, has proven extremely effective in bringing the government to the bargaining table. The movement has demonstrated exceptional leadership and organizational abilities, which have proven successful in obtaining positions within the administrative system and various kinds of welfare concessions from political leaders. However, the current state of piquetero collaboration with the government could significantly weaken the movement, including its ability to organize effectively in the future. Though the MTD remains strong at present, the power of the movement has decreased over time as activists are increasingly being co-opted (Petras, 2003). The future role of the movement as a representative organization remains unclear. However, the movement appears to be following a route similar to past Argentine unions, to the extent that portions of the movement have developed into a kind of state supported workers’ coalition. Considering these circumstances, what does this relationship mean to the working members of the movement and to the continued existence of the piquetero organization? Can the movement continue to operate as an autonomous organization, able to represent and uphold constituent interests and rights?

Like the piqueteros, the neighborhood assemblies have also demonstrated a remarkable organizational capacity and ability to implement various community based self-help activities. The establishment of community vegetable gardens stands out as one such activity. This approach to hunger has shown to be innovative, as it provides food directly, without the support of higher institutions. And as the number of NA’s have declined and have become focused more around working at the community level (Petras, 2003), will they continue into the future as they have in countries like Brazil, now that they have been established? Will the huertas become a lasting remnant of this phenomenon in Buenos Aires? And will citizens continue to utilize the gardens as a resource for building greater food sovereignty and stronger community in normal times?

In both examples, mobilization occurred as a result of numerous factors, which most prominently included the structural economic reforms under neo-liberalism of the 1990’s, the successive deterioration of representation and extensive corruption. The culmination of these problematic factors, which resulted in the crisis of 2001, offered the

opportunity structure for citizens to “take advantage” of the situation to influence the state for socioeconomic and political change. Framing structures or the collective interpretation and perception of the movements role as a response to the crisis and organizational resource capabilities, as demonstrated by the presence of piquetero and NA activity both prior to and following the crisis, also explain mobilization in this case.

Regardless of the organizational achievements of these movements, how should these civil movements be evaluated in regard to their achievement in attaining proposed objectives and demands? The movements’ “radical” anti-state criticism and general rejection of the current political establishment (at least initially) appear to have softened over the course of this phenomenon. While the movements have made strides in improving community dilemmas and influencing national and local politics to a degree, to what degree have these civil movements achieved the kind of political reforms suggested by their critiques and demands? In any event, it is clear that in actively attempting to reform the nation’s political institutions, with the aspiration of a more responsive and accountable government, Argentine citizens have demonstrated their need for improved civil rights and representation. Moreover, in choosing democracy, Argentine citizens have at least assured the future of democratic participation and civil society in Argentina.

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Acknowledgments

Faculty Mentor: Erik Wibbels, Ph.D.

I wish to thank the following people for their generous assistance and guidance in the making of this article: Alyson Brooks, Dr. Erik Wibbels, Dr. Steve Woodard, and Dr. Gabriel E. Gallardo. Special thanks to the UW Ronald E. McNair Program for granting me the support and the opportunity to conduct this research.

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Nondestructive Sensing – Dielectric Spectroscopy

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Abstract

Non-destructive sensing has huge amount of application in any manufacturing process. The nature of dielectric spectroscopy is both non-invasive and non-destructive, making observations of materials in a process possible without having to stop the process. This allows for alterations to be made during the process that otherwise would not have been able to be made in an efficient way otherwise. The sensor that has been designed is flat and measurements only taken on one side in order to make it easy to be retrofitted on to a machine. Calibrating the sensor to a materials dielectric profile with different frequencies will allow a sensor to be able to determine the composition of unknown materials.

I. Overall Sensor Concept and Design

Dielectric Spectroscopy

The dielectric spectroscopy sensor, shown in figures 1, 2, and 3 calculates the dielectric properties of a material in a range of frequencies. This sensor is used to characterize materials based upon their dielectric constants at these different frequencies, for a material's dielectric constant varies with its composition. Because of the non-destructive nature of calculating dielectric constants, there will be many useful applications for this method in industry and else where.

Sensor

In order to make a sensor that is dimensionally sound for production line real time analysis a fringing field capacitor design is incorporated. When the capacitor plates are turned side ways there is a fringing electric field on both the top and the bottom. In order to neutralize this effect so the only measurements that are being taken are on one side of the sensor there is a grounded guard plane attached to the bottom. The capacitance plates on the positive side of the sensor are termed the positive electrodes or “drive” and the negative side is termed the negative electrodes or “sense”. As can be seen in figure 1, there is a certain penetration depth, commonly estimated at 1/3 the wavelength (distance from a drive electrode to a sense electrode) associated with each drive to each sense. The smaller the wavelength is the stronger and more reliable the measurement. Because of this the only real affect on

the measurement will be within that $\frac{1}{3}$ of the largest wavelength. Because there is more than one drive electrode and one sense electrode, each drive and each sense creates an electric field with each or the opposite. This is good because it will give many measurements and an average value can be extracted at each frequency (refer to figure 6).

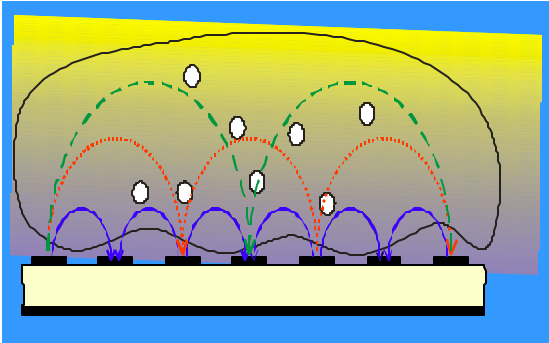


Figure 1: Dielectric Sensing

Figure 2 is a top-down view of the sensor and shows the overall design. The signal is pushed through the “drive” and measured through the “sense”. The signal and is made and sensed with an RCL Meter and values stored.

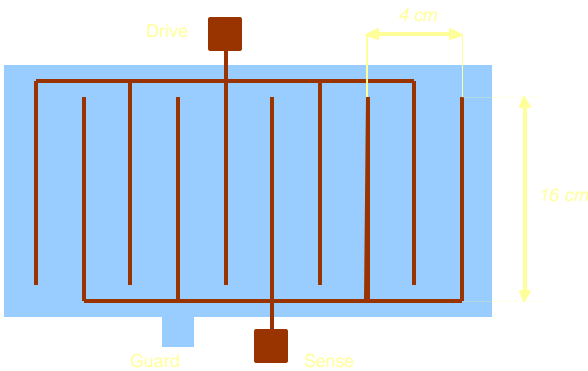


Figure 2: Basic Design of the Sensor

Figure 3 is a combination of both figures 1 and 2 and gives the outlined idea: the drive pushes the signal through the material, the signal change is directly influenced by the composition of the material, and the sense picks up the new signal. For each frequency chosen this is done and at the end the material can be profiled in this range of frequencies. Because the composition of the material that is being profiled is known the system can be calibrated to measure unknown material and determine their composition based on their profile.

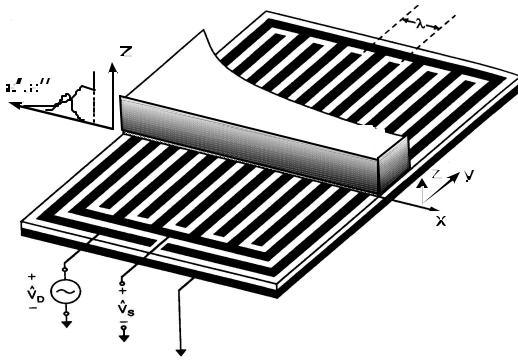


Figure 3: Dependence of Sensing Depth to Wavelength

II. Application in Paper Machines

Paper Pulp Composition

The ability to monitor and control the paper pulp composition within the paper machine at each stage in its process is crucial in optimizing the performance both due to time and resource management. As of now there is not an accurate way of determining the composition of the paper pulp in the wet end of the process (90% and greater water). It is important to be able to do this because if the mix is not right the paper will come out band in the end of the process and have to be either recycled and sold at a lower cost or just scrapped. This can get very costly especially because the current methods only measure at a much lower concentration of water, so at this point if it is noticed that the composition is incorrect it is too late for that run to make the necessary changes.

Sensor Design Advantages

Because a large part of the paper pulp composition at the wet end is liquid a flat sensor that can sit under it would be preferred. Another reason for a flat sensor is it is much easier and cheaper to retro fit the paper machines with a two dimensional sensor.

Measurements

Figure 4 shows the profile of the paper pulp at varying concentrations between 3% and 10% with capacitance measurements taken at a frequency range between 100Hz and 10,000Hz. From this graph the paper pulp consisting of just fiber and water can be profiled based on its dielectric properties (capacitance measurements).

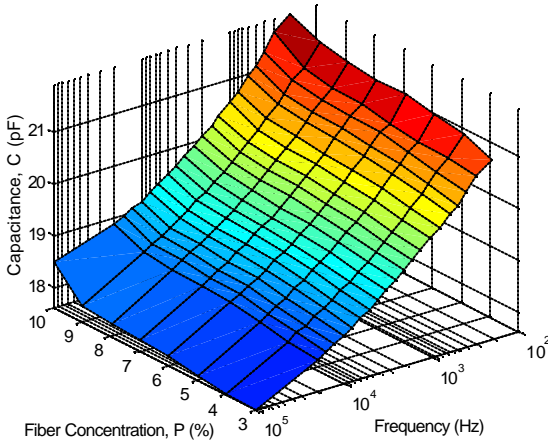


Figure 4: Fiber Concentration vs Capacitance vs Frequency

Figure 5 shows the estimation curve generated from these measurements of paper fiber being between 3% and 10% of the paper pulp composition. The generated curve fits very closely to what the actual measurements are. This is important because if you can measure the capacitance of the material you can closely estimate the composition of the material.

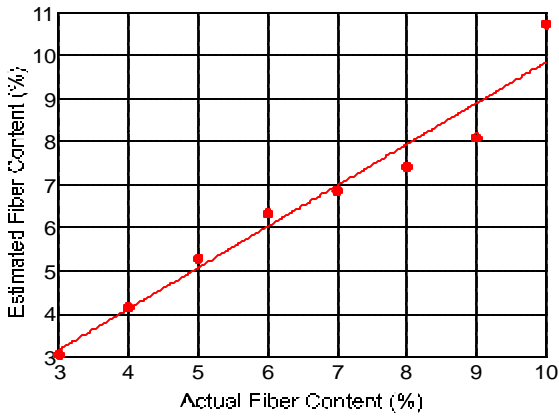


Figure 5: Estimation Curve of Fiber Percent vs Actual Fiber Percent

Current and Future Work

The next step was to measure the paper pulp with titanium dioxide, calcium carbonate, and clay individually with the water and paper fiber, and then with combinations of each. This has been done and there has been a trend shown promising in profiling these compositions. The next step would be to incorporate a varying temperature, since the dielectric constant of any material depends on its temperature.

III. Application with Plastics

Plastics and Moisture

Certain automotive manufacturers need to be able to determine then amount moisture in their plastic parts in order to keep the drying time of the paint they put on it constant. How fast the paint dries depends of how much moisture is in the part, and the final color of the paints depends on how fast the paint dries. Instead of spending large amounts of money to keep huge warehouses all over the word at the same temperature and humidity levels, it would be much easier to determine the amount of moisture in the product and dry it accordingly. This sensor needs to be able to test the moisture in parts that vary in size and shape and also be mobile enough to easily move from part to part.

Sensor Design

The approach taken for this application is to measure the plastic at different distances (on a micron scale). It is the same concept as the paper pulp sensor except now part of the composition of the material is air and that is varied with the distance of the sensor to the material. Figure 6 shows a schematic of the sensor. There are 3 different sensors on this one card and the only difference between them is the distance of the electrodes (wavelength).

Measurements

Figure 7 shows two sides of the same plot. It is a plot of capacitance of the plastic in relation to the distance of the sensor at different frequencies.

Future Work and Considerations

One consideration that has been held constant in the experiments is the amount of time the plastic was set in the water and the amount of time the plastic was out of the water before it was measured. The diffusivity of the plastic might become a factor in the actual calibration of the sensor. If where the water sits inside the plastic changes (dependant on the diffusivity) the dielectric measurements will change because of the large dielectric constant water has and the penetration depth of the sensor.

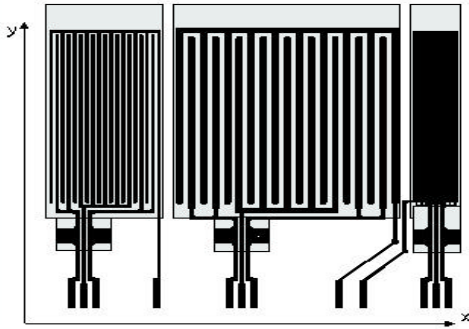


Figure 6: Sensor used for Plastic

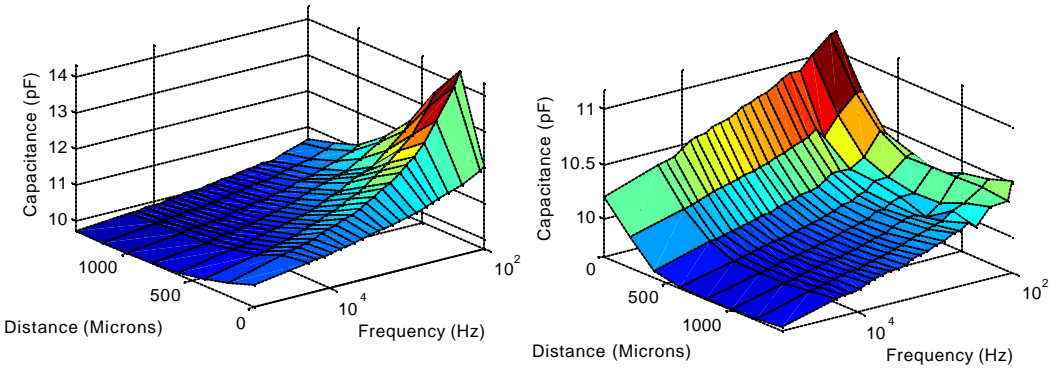


Figure 7: These plots show enough relationship of distance that the plastic can be profiled.

IV. Application with Pharmaceutical Tablets *Coating Thickness*

As of now, pharmaceutical companies do not have an efficient way of determining the coating thickness of their tablets during their manufacturing process. The only way to determine the coating thickness of the tablet is to cut it open after it is made and measure it under a microscope or with a caliper. The coating thickness of the tablets directly affects when in the body the tablet dissolves. The government is putting stricter regulations on the accuracy of the coating thickness. Because the determination of the coating thickness has to come at the end of the process there is a lot of money being wasted on scrapping whole batches of tablets because the thickness is not accurate enough. Figure 8 shows a

cross sectional view of a tablet. The bright yellow outer portion is just the paint on the tablet, and the more opaque looking section between the powder and the paint is the actual coating thickness.

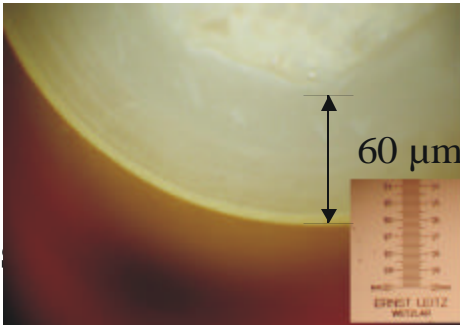


Figure 8: Cross Section of Tablet

The coating thickness of the tablets is on the order of 50 microns and because of this the application requires a sensor design that can handle these considerably smaller parameters. At the MEMS (Micro Electric Mechanical Systems) the are more parameters needed to be controlled that will severely impact the sensor. Figure 9 shows a 3-Dimensional design of the sensor that is soon to be fabricated.

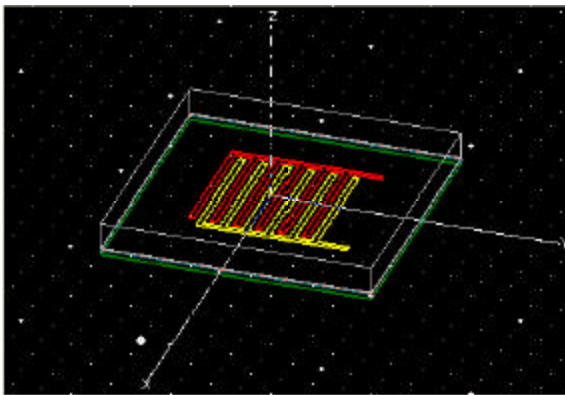


Figure 9: 3-Dimensional Image of MEMS Sensor

Future Work

Because this project is in the very preliminary stages the change in parameters due the scale needs to be investigated more in depth and also finding a way generate the right signals on that small scale needs to happen.

V. Conclusions

Dielectric spectroscopy is strong non-invasive method in determining characteristics of materials and later profiling them. This coupled with the flat, mobile design of the sensor makes for an effective way of tracking and therefore controlling manufacturing processes. Because it is non-invasive and non-destructive the measurements can be taken while the product is being formed and alterations are made possible in an effective way. Real time control of an operation with this design can be devised and automated, making a faster, smoother and more accurate process.

Acknowledgments

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Recognition of Famous Stimuli: Can There Be A Building Inversion Effect?

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Abstract

Several studies have pointed out that face recognition is disproportionately impaired by stimulus inversion when compared to recognition of other types of visual stimuli. Previous research has also shown that famous faces, when compared to houses, have a greater inversion effect. The present study sought to find out if the inversion effect is a product of familiarity with the stimuli or of “face specialness.” Data was obtained from 24 groups of 5-8 UW students each who was shown either right side up or inverted pictures of famous buildings and houses. Memory recognition for the two categories of stimuli was recorded. No significant difference was found between famous buildings and houses. Our findings support the belief that a pronounced inversion effect may be due to facial features and not due to familiarity.

Introduction

One of the easiest and most common ways to recognize others is to look at their faces. However, the neural process that accompanies this seemingly easy task is much more complex than it appears. Face processing has been a topic of much importance to the fields of psychology, neurology, and even criminology. Face processing is important to psychology and neurology for many reasons; it has implications for brain evolution, skilled behavior, automatic behavior, and social behavior. As for criminology, face processing is a key component in determining the accuracy of eyewitness testimonials, lineup recognition, and even in developing surveillance systems that can identify criminals-at-large. Within these disciplines, much attention has been placed on the results of several studies that suggest activation of a “special” process when recognizing faces (Collinshaw & Hole, 2000). Based on the results from previous research, the present study sought to further investigate face processing and the conditions under which faces are ‘special’.

In trying to understand the way our brain processes environmental stimuli, it is important to point out the differences and similarities in the processing of, for example, a human face and a plum tree. Neuropsychological studies, which focus on the neural basis of behavior, have found that face recognition can be disproportionately

impaired by distortion relative to the recognition of other kinds of objects, suggesting that people use different brain processes for face and other stimulus recognition (Wilson, Drain, & Tanaka, 1998). Many psychologists have tried to understand face “specialness” by manipulating the way in which face stimuli are presented to participants and later testing their accuracy for face recognition. In their study, Collinshaw & Hole (2000) used faces that were either normal (non-manipulated) or degraded (i.e. blurred) and their results showed that blurring, scrambling, and inversion led to loss of important information, as shown by subjects’ reduced recognition accuracy in those conditions.

Furthermore, other psychological research (Farah, Tanaka, & Drain, 1995; Collinshaw & Hole, 2000) has highlighted the importance of the manner in which faces are perceived, stored, and retrieved. For example, facial features are far more recognizable when presented in the context of the whole face rather than in an isolated fashion. It appears that face perception is different from other kinds of object recognition in that the holistic organization of a face provides crucial information to the observer, more so than does the information obtained from a non-face object. In 1969, a researcher by the name of R. K. Yin, first introduced the notion of a Face Inversion Effect (FIE). The FIE, Yin argued, refers to a heightened processing disadvantage for inverted faces than for other types of visual stimuli. After several studies, Yin along with other scientists found that “sensitivity to the relative positions of features within a face is reduced when they are inverted” and thus the Face Inversion Effect term was created (Yin, 1969;1970, Collinshaw & Hole, 2000).

Intrigued by Yin’s results, many lines of research began to study the conditions under which a FIE emerges and does not emerge. Before too long, scientists came across the issue of stimulus familiarity. A central issue in deciphering the inversion effect phenomenon is that of being familiar with the stimulus and the ensuing impairment when inversion becomes a factor. Several study results have posited that a disproportionate inversion effect takes place when people retrieve a face that is familiar to them when compared to retrieving a non-familiar face (Loftus, Oberg, & Dillon, 2004; Valentine, 1988). A recent study by Loftus, Oberg, & Dillon (2004) showed that when retrieval of a familiar face is required during the study phase of a recognition experiment, a FIE emerges. Loftus et al. hypothesized that the FIE results from processing that occurs when faces are retrieved from memory rather than from processing that occurs when facial features are stored in memory and thus the FIE would emerge when using celebrity faces. Their results from this experiment showed that when comparing celebrity faces and

computer-generated (unfamiliar) faces, the inversion effect was greater for celebrity (familiar) faces, thereby highlighting an important feature of the FIE and inspiring further research.

Experiment

Based on the existing knowledge regarding face processing and the Face Inversion Effect, this study sought to find out if the inversion effect is a product of familiarity with the stimulus or, as current research suggests, of face “specialness”. To our knowledge, there is little to no research that compares famous faces and famous non-faces as it pertains to the FIE and its consequent processing disadvantages. To address the question of “are faces truly special?” we chose to utilize famous stimuli that did not have facial qualities and compare the magnitude of its inversion effect (if any) to that of famous faces. In this experiment, we aimed to further unveil the etiology of the FIE and compared subject recognition accuracy between inverted and upright famous buildings and houses (instead of famous faces and computer-generated faces). In order to compare and contrast our results with those of other studies, we decided to follow the same methodology that previous research (Loftus et al. 2004) has utilized.

Pilot test

The famous buildings stimulus set came from a pool of 178 black-and-white photographs of buildings in different regions of the world. Their familiarity was determined by a pilot trial conducted on thirty-five subjects with normal or corrected vision who were shown each building on a flat wall via LCD projector and had to rate their level of recognition for each building. The rating scale ranged from 1 (“I do not recognize this picture”) to 4 (“I definitely recognize this picture”). Only those buildings that had at least 31% recognition based on a collective score from our subject cohort were included in the actual experiment. Based on the results from this test, we comprised a set of 144 widely recognizable buildings whose recognition percentage ranged from 31 to 97.

Method

Participants

A total of 107 University of Washington undergraduates participated in 24 groups of 1 to 8 observers per group, in exchange for course credit.

Stimuli

Two stimulus sets, famous Buildings and non-famous Houses were assembled. Pictures of 144 famous Buildings were uniformly

formatted using Photoshop and any signs or words that could be linked from the buildings were removed. Houses were 144 photos of similar houses in a middle-class Seattle neighborhood. All stimuli were rendered as grayscale images, 500 pixels high x 250-600 pixels wide. Each picture's luminance ranged from 0.2 to 14.8 cd/m^2 across pixels.



Apparatus

Stimuli were displayed on a flat-white wall via an LCD projector interfaced to a Macintosh G4. Stimulus displays were accomplished within MATLAB, using the Psychophysics Toolbox. Observers sat in 8 seats arranged in two rows of 4. When no stimulus was displayed, blank screen luminance was $3.7\text{cd}/\text{m}^2$.

Design

Every group participated in an experimental session that incorporated two sub-sessions. For the 24 groups, famous Buildings were stimuli in the first sub-session, while Houses were stimuli in the second sub-session. The basic unit of each sub-session, called a tray, consisted of 24 virtual pictures. There were six trays in each session. For each tray, 12 target pictures were shown in a study phase. A test phase immediately followed in which all 24 pictures in the tray – the 12 just-viewed targets, randomly intermingled with 12 never-seen distracters – were presented. Half the stimuli are targets and half are distracters; targets and distracters are switched in 12 of the 24 groups. Across the 24 groups, each image appeared in each of the 12 conditions exactly two times.

Each target stimulus fell into one of 12 study conditions, defined by combining Upright/Inverted with six stimulus durations. Exposure durations were longer by a factor of three for the Inverted than for Upright pictures. For Upright pictures, exposure durations were 17, 33, 50, 67, 80, 100 ms while for Inverted pictures they were 50, 100, 150, 200, 240, and 300ms. This procedure was implemented to ensure appropriate exposure duration for the observers to have a fair chance at recognizing inverted pictures. During the study phase of each tray, each of the 12 study conditions was assigned to one of the 12 target stimuli in a manner that appeared random to the observer.

Procedure

An experimental session began with the display of four practice pictures of famous Buildings (which were not shown again during the actual study phase) along with detailed study instructions and general test instructions. After the first study phase, detailed test instructions were provided. Following the six trays in the first sub-session, observers had a brief break before proceeding through the second sub-session.

Each study trial began with a 1000-ms fixation cross in the center of the screen, accompanied by a 1000-hz warning tone. Next came a 300ms blank screen, then the target picture in its assigned orientation for its assigned duration, then the blank screen again. To maintain moderate performance, target picture contrast was reduced by scaling pixel luminance to range from 2.4 to 5.6 c/m^2 for each picture. Following each study picture, observers rated their confidence that they would subsequently be able to recognize the picture on a scale from 1 (“Definitely no”) to 4 (“Definitely yes”). The purpose of this rating procedure was to encourage the observers to attend to the target pictures.

A single test picture was shown during each test trial. Observers rated their confidence that they had seen it during the previous study phase, using a scale value of 1 (“Definitely no”), 2 (“Probably no”), 3

(“Probably yes”), or 4 (“Definitely yes”). All test pictures were shown upright at full contrast and remained visible until everyone had responded.

Results

The results are shown in Figure 1. When comparing upright/inverted houses and buildings, recognition accuracy for each duration seems to yield a lower performance level for inverted stimuli and even more so for inverted buildings, thereby hinting towards a disproportionate inversion effect. (Figure 1A, 1B).

However, our state trace plot for house performance vs. famous building performance suggests that there is no inversion effect due to a lack of significant difference in recognition accuracy between both types of stimuli and orientation (Figure 1C). Due to a limited number of participants ($n=107$) and lack of statistical power, these results are tentative and we cannot make any definitive conclusions regarding a possible building inversion effect. Our present results call for further data collection which is currently in progress.

Discussion

In this study, we investigated subject recognition accuracy for upright/inverted famous buildings versus upright/inverted non-famous houses to determine whether the phenomenon known as the Face Inversion Effect occurs as a result of the effect of familiarity or if it is more directly related to facial characteristics of a stimulus. Our results show that the inversion effect for famous buildings vs. non-famous houses was not significantly higher; therefore, we conclude that there is no inversion effect in this situation. Our findings may support the notion that faces are “special” and that the disproportionate disadvantage of inverting faces occurs as a result of certain special features which apply only to faces.

Previous research has suggested that an inversion effect might be found by testing non-face stimuli (e.g. dot patterns); comparing face and object recognition accuracy when this stimuli is right-side up to that of when it is inverted; and linking the results of this study to the notion that face recognition may be due to the subject’s expertise or level of exposure to a certain type of stimuli (Wilson, Drain, & Tanaka, 1998). However, given our results, we postulate that even when recognition expertise is involved (i.e. when one is very familiar with a building), faces may still involve a different level of processing that creates a larger inversion effect for face stimuli over non-face stimuli.

To further investigate the issue of a special inversion effect when using faces, Loftus et al. devised a set of varied experiments which presented observers with different modes of testing the FIE. In trying to identify the situation(s) under which a FIE emerges, Loftus and colleagues compared recognition accuracy for 1) unfamiliar, computer-generated faces and houses, 2) celebrity faces and houses, and 3) celebrity faces and heterogeneous cityscapes.

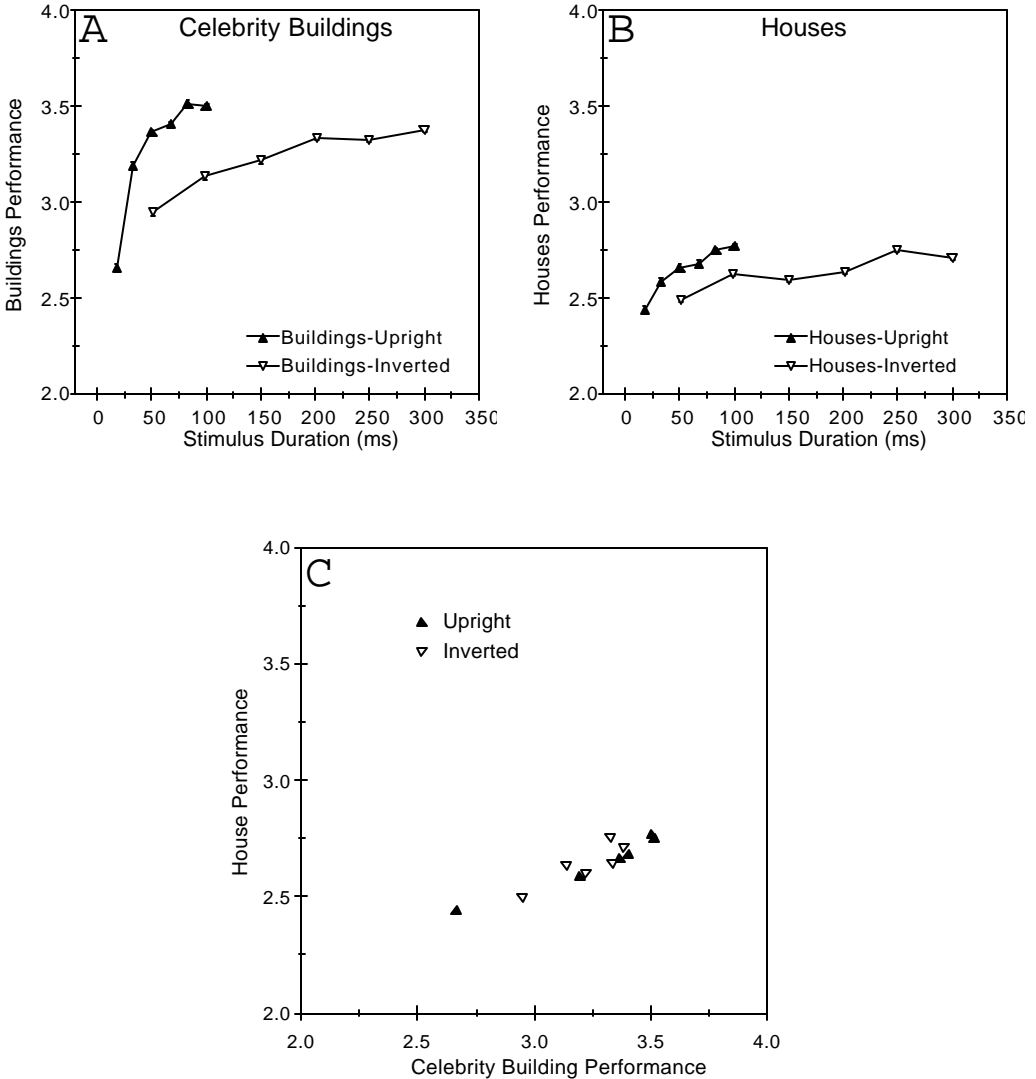


Figure 1. Experiment data.

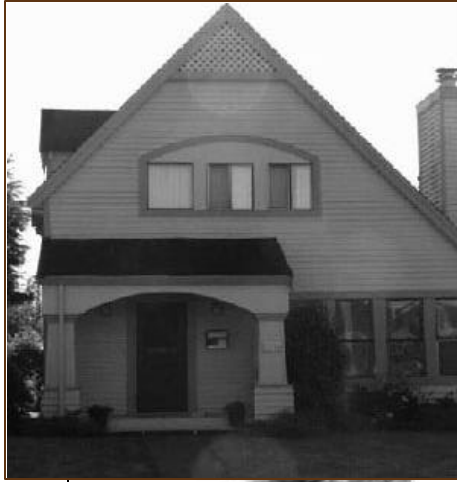
In an experiment with computer-generated faces, Loftus et al. (2004) found that there was no significant FIE and suggested that “whatever processing is responsible for the FIE applies to retrieval of known faces, but not to encoding of unfamiliar faces.” In Experiment 2: Celebrity Faces and Houses, Loftus and colleagues found that a heightened inversion effect emerged for famous faces, as shown by stimulus points on the state-trace plot, which were displaced leftward (i.e., toward poorer Face performance), as compared to Upright stimuli (see Figure 2C). These results suggest that inverted performance is worse for Faces than for Houses, thereby yielding a Face Inversion Effect. Similarly, in Experiment 3: Celebrities and Cityscapes, Face performance was notably worse when compared to the upright stimuli and, thus, Loftus et al. determined that inversion affects faces more than cityscapes (see sample stimuli). In short, these various experiments illustrate some of the circumstances under which a FIE can be seen and demonstrate how the presentation of stimuli to observers affects their recognition accuracy. Moreover, this type of research encourages further investigation of the FIE under different conditions and with novel stimuli.

As face processing is an issue of much importance and impact both to our scientific community and to our every-day interactions, we aimed to further define the factors which are presumed to be essential in inducing a FIE and to challenge the idea that a face inversion effect is most pronounced when using famous faces as opposed to using famous, non-face stimuli. Although the majority of scientists tend to entertain the idea that faces are “special,” there is still much controversy about the way in which we process faces, the way in which this may impact brain activity and the way in which we experience our world. Our project is unique in that, to our knowledge, very little research has examined the connection between famous buildings and the FIE. Upon further collection and analysis of data, we could help to provide insight to those who support and refute the argument that faces are special in the way they are processed.

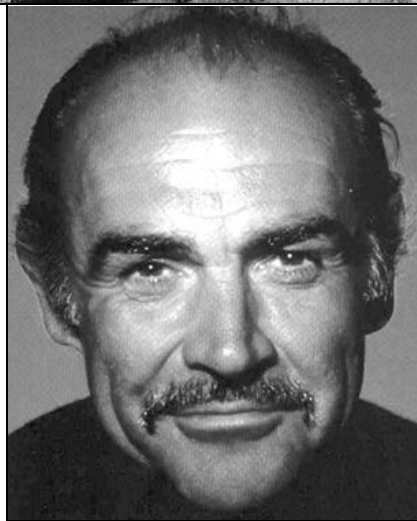
Conclusion and Recommendations

The results of this experiment suggest that an inversion effect may not be solely due to a level of familiarity with a stimulus, but may also be related to the kind of stimulus being processed, i.e., famous faces. Based on our findings we recommend that further research be done with famous buildings and that conclusions should only be made once sufficient

statistical power has been accomplished. We are currently undertaking this task and plan on publishing our findings upon completion of the project.



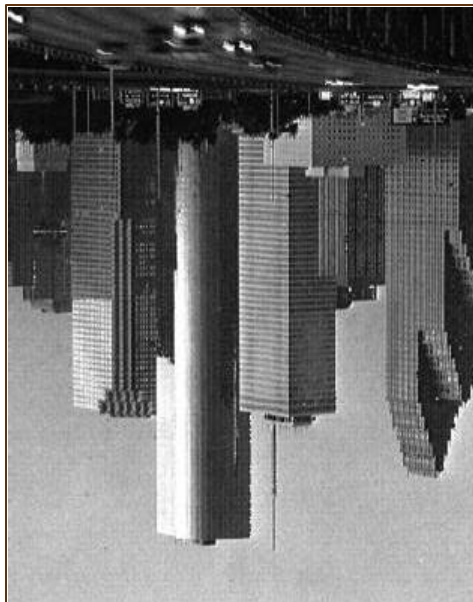
Sample stimuli from Loftus et al. (2004)
Houses vs. Computer-generated faces



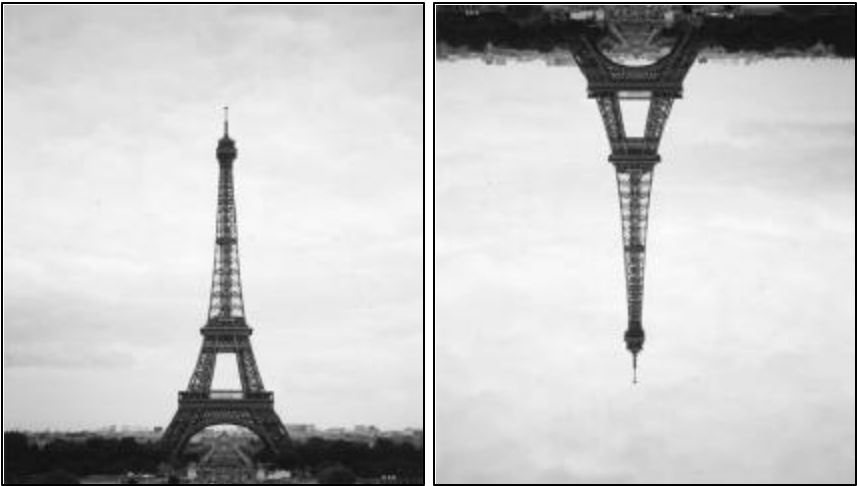
Sample stimuli from Loftus et al. (2004)
Cityscapes vs. Famous faces



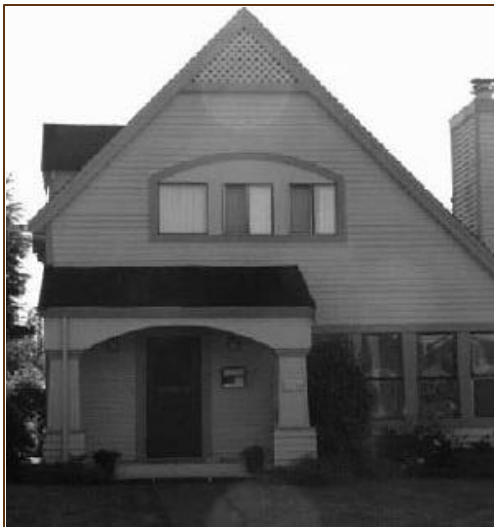
Sample stimuli from Loftus et al. (2004)
Cityscapes vs. Famous faces



Sample stimuli from Loftus et al. (2004)
Cityscapes vs. Famous faces



Sample stimuli from the present experiment
Houses vs. Famous Buildings



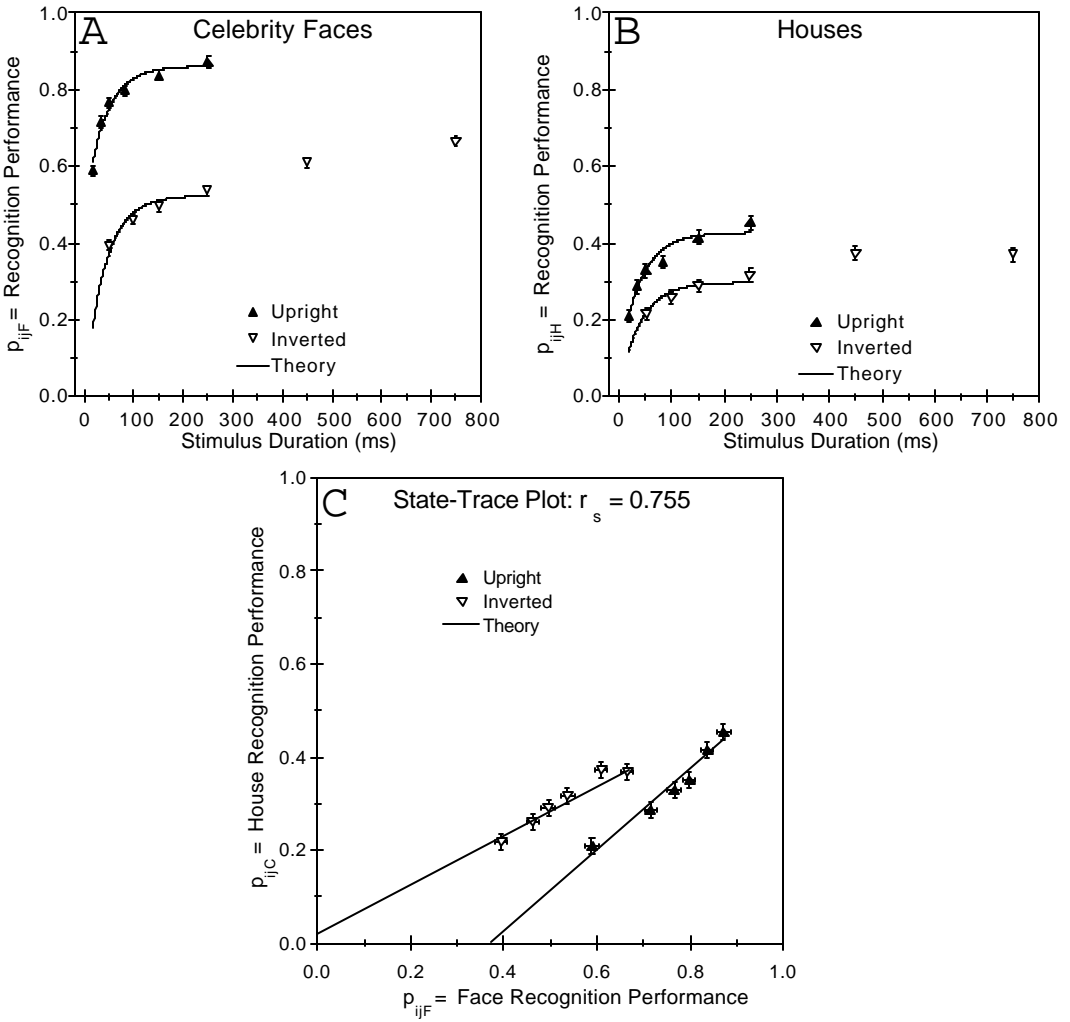


Figure2. Experiment-2 data. Each data point is based on 1,770 observations.

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Acknowledgments

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Understanding Racial Biases in Adoptive Parents

Madalene Day

Abstract

This study assesses racial biases through explicit and implicit measures to gain a greater understanding of how racial biases relate to the desire to transracially adopt. The 23 participants in this study are pre-adoptive and adoptive parents from a small private adoption agency in Redmond, Washington. The measures used include a short demographics questionnaire, the openness to transracial adoption (OTRA) scale, the Internal and External Motivation to Response Scales (Plant and Devine, 1998), and three race based IATs: White Children-Black Children, Biracial Children-Black Children, and White Children-Biracial Children. The results of this study suggest that implicit association bias may not just be linked just to a pro-white bias, but also to a pro-light skin tone bias. Additionally explicit openness was moderately correlated with a stronger pro-white bias in the White Children-Black Children IAT. Overall these results are compelling and further illustrate the need for continued research in this area.

Introduction

Transracial adoption, defined as an adoption of a child who is of a different race or ethnic group from the adoptive parents, is becoming increasingly more common. In 2003 USA Today Karen Peterson reported that according to the 2000 US census seventeen percent of adoptions in the United States were transracial, this was also the first time the US census has reported statistics about adoptees and it was calculated that 2.5 percent of all children in America are adopted. The roots of transracial adoption can be traced back to the beginning of the twentieth century, yet it has only been in recent decades that concerns about how transracial adoptees form their identity and relate to all parts of their heritage have been discussed. While action was taken under the banner of the best interest of the minority child, the outcomes did not always support this claim.

In the early 1980's activist groups like the Association of Black Social Workers help to pass laws prohibiting the transracial adoption of black and biracial children (Forde-Mazrui, 1994). It was only a short time after these laws went into effect that the government realized the negative impact they had on the children. The state foster care system became overwhelmed with the disproportionate number of black and biracial children that were adoptable, yet waiting for homes. This was

compounded by the outcry from non-black adoptive parents who were being denied placements based solely on race. These laws were overturned in the late 1980s and early 1990s, but not before leaving a sentiment that transracial adoption is harmful to children.

Despite political qualms, transracial adoption is a necessary and essential part of American society. Racial minorities still make up a majority of the foster care system and in 2004 it was reported by the U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau that at the end of the 2002 fiscal year approximately 532,000 children were in the government foster care system, 312,000 of those children were of racial minority status. Furthermore, children who are racial minorities dominate the number of children waiting to be adopted. At the close of the fiscal year it was reported that approximately 76,000 of the total 126,000 children that were waiting to be adopted were racial minorities. Additionally 53,000 children were adopted from the foster care system in 2002 and 30,000 of them were ethnic minorities, of the total number of children who were adopted 76% of the children adopted were adopted by a non-relative or foster parent. While not all of these children were transracially adopted research has shown that the majority of adoptive parents are Caucasian; it was reported in the 2000 census that 76% of adoptive parents identified themselves as white thus indicating a continuing trend toward transracial adoption (Peterson, 2003). It should be noted at this point that the statistics being reported only represent national foster care statistics; it does not include private adoptions or international adoptions. It could be assumed that with the popularity of Asian, Central American and Caribbean international adoptions these numbers would add to the overall picture of how common transracial adoption is.

In addition to looking at the need of adopting children who are racial minorities, it is also important to understand the other motivations adoptive parents may have in transracially adopting. Social workers must be cautious when they are assessing a family for a transracial placement. For as many success stories as there are there are stories of tragedy and a social worker must counsel and assess each family in order to make a recommendation as to the appropriateness of a transracial adoptive placement. Both internal and external factors must be accounted for in these assessments; attitudes, beliefs, social and community support and the willingness to be educated about the needs of transracially adopted children and multiethnic families are all factors to be discussed and considered in a social worker's recommendation. Still, the problem with

these assessments is fundamental in that regardless of how experienced a social worker may be, they have no concrete way of predicting the success or outcome of a transracially adoptive placement. Furthermore there is very little guarantee that the social worker will or be able to fully discuss the complexities of raising a transracially adopted child with the adoptive family in the short time they spend writing the pre-placement report. Thus the need for an assessment tool that is both educational to the parties involved and is able to offer some concrete evidence as to the appropriateness of a transracially adoptive placement is needed.

The first step in forming that assessment tool is to understand how explicit attitudes and implicit associations correlate. This could be used to find similarities that would provide social workers an insight into the level of racial awareness and biases that the adoptive parents may hold. If this were possible the opportunities of better education and counseling about transracially adoptive issues would be endless. One of the most current tools used to explore implicit bias is the Implicit Association Test or IAT developed by Greenwald, McGhee and Schwartz 1998. The IAT has been modified in many ways to explore a variety of biases and most pertinent to this study are the race IATs. In particular the Black-White race IAT looks at how people respond to associating pictures of Black people and White people with words indicating “good” or “bad”, this IAT has been widely studied yielding a robust finding that people overall tend to associate White more strongly with “good” and Black more strongly with “bad” (Dasgupta, McGhee, Greenwald and Banaji, 1999). For the purposes of this study adoptive parents will not only compare pictures of black and white children, but they will also compare both black and white children with phenotypically looking lighter skinned black or “biracial” children. This new element of the “biracial” is especially important for the purposes of creating an adoption assessment tool. The “biracial” category not only represents children of a multiethnic background, but it also represents children who are phenotypically lighter skinned, including Asian, Pacific Islander, Native American/Alaskan and Latino.

It is of particular interest to the researcher to see if participants respond differently to the “biracial” category than the “black” category and if there is any relation to that response in their explicit data that indicates either a preference of a skin tone rather than a bias for or against a specific racial group. This study also hopes to find a correlation between explicit and implicit results that would help to illustrate an overall description of a participant’s bias trend. The most important goal of this study is to begin to understand how the adoption community, including social workers, adoptive parents and adoptees, can be better

serviced by examining how implicit and explicit biases are related to the issue of transracial adoption.

Methods

Participants

Twenty-three pre-adoptive and adoptive parents (7 men and 16 women) from a private adoption agency in Redmond, Washington participated in this study. On average their ages ranged between 30 and 40 and they were similar in income and education. The majority of the participants identified themselves as White, married and with children. A third of them have children of a different ethnicity than their own and the participants have on average been involved in the adoption process for a year.

Procedure

All participants were asked to log on to a website that guided them through a brief explanation of the purpose of the study, the methods that will be used and a statement of understanding regarding the security of the participants identity as it related to their results. At that point the participant proceeded with the study beginning with two surveys and continuing on to three Implicit Assessment Tests. The entire process was estimated to take participants twenty-five minutes to complete.

Measures

The study consisted of two surveys and three IATs. The first survey consisted of general demographic questions and questions pertaining to the individual's adoption experience, it concluded with a question asking the participants to choose a statement that best described their belief from the following choices. The openness to transracial adoption (OTRA) scale was scored on a five-point likert scale; see the example below of scoring associated with statement:

- 1= "I strongly prefer to adopt a child of my own race/ethnicity"
- 2= "I moderately prefer to adopt a child from my own race/ethnicity"
- 3= "I have no preference to adopt a child of my own over a child of another race/ethnicity"
- 4= "I moderately prefer to adopt a child of another race/ethnicity"
- 5= "I strongly prefer to adopt a child of another race/ethnicity."

The second survey consisted of the ten items from the Internal Motivation to Respond Without Prejudice Scale (IMS) and the External Motivation to Respond Without Prejudice Scale (EMS) (Plant and Devine, 1998). Participants were asked to rate each item on a scale

ranging from 1 (strongly disagree) to 9 (strongly agree). Although data was collected on the IMS and EMS, it will not be presented in this paper.

Each participant was then presented with the three implicit attitude tests (IATs), which were counterbalanced, so that there would be no confounds based on the order subjects were presented the stimuli. The three IATs compared “Black Children and White Children”, “Black Children and Biracial Children” and “White Children and Biracial Children”. All participants were shown the pictures of the children, three boys and three girls of each ethnic background, with the racial category each belonged to as well as the “Good” and “Bad” valence words (See Table One). These IATs asked the participants to identify the pictures with the given valence category (See Table 2 for sample IAT dynamic).

As explained in Dasgupta, McGhee, Greenwald and Banaji in 1999, previous research has consistently shown that despite counterbalancing participant show a stronger automatic preference for a “pro-White” bias, meaning that the latency scores between White and Good are significantly shorter than the latency scores between White and Bad and the inverse is true of Black and Good and Black and Bad, thus the “Black Children and White Children” IAT is assumed to show similar results and therefore providing a known standard of response.

Results

Table three contains a summary of the critical dependant variables, including the three IATs and the openness to transracial adoption rating. As recommended by Greenwald, Nosek and Banaji (2003) both traditional IAT scores (in milliseconds) and D measures were computed for the three IATs. The traditional IAT score represents the difference in response times (latencies) between the two pairings (e.g., black children + good and white children + bad subtracted from black children + bad and white children + good). The D measure is a measure of the strength of the participants implicit association similar to an effect size. Scores of .2 are small, .4 are moderate, .6+ are large. Positive D scores indicate a stronger implicit association with white + good (and black + bad), white + good, and biracial + good. Negative D Scores indicate a stronger associate with black + good (and white + bad, etc.).

Overall it was found that participants more strongly associated the lighter skinned targets (white and biracial children) with positively valenced words. A series of single sample t-tests indicated that participant’s D scores for each IAT were significantly greater than zero, $p < .05$. Although participants scored highest on biracial-black IAT,

participants' scores on the three IATs were not sig. different from each other (all paired-t p-values were greater than .05).

Finally, the relation between participants' explicit openness to transracially adopt (OTRA) and their IAT scores was examined. The relation between participants' openness to transracially adopt was differed from the study expectations. Pearson correlation coefficients indicated that there only a weak, nonsignificant, relation between OTRA scores and scores on the white-biracial and biracial-black IATs (see Table 4). There was an inverse relation between OTRA scores and the white-black IAT, indicating that participants who expressed more openness to transracially adopting had higher implicit association with white children + good (and black children + bad).

Discussion

While transracial adoption is a greatly debated issue, it is surprisingly under researched. The intricacies of transracial adoption not only effect the adoptees and adoptive families, they effect society overall. Long term effects of transracial adoption and the multicultural family will have a great impact both socially and politically and it is important that research be at the forefront of this change. This study sought to apply cutting edge research techniques in an effort to understand one aspect of the transracial adoption issue. The concept of associations between attitude and racial categories is not a new one, however the use of a "biracial" category adds another dimension to our body of knowledge. By using the "biracial" category the study not only challenges assumptions about the common persons perception of race, but it also draws attention to a racial group that is newly, but exponentially emerging. The "biracial" category represents a group that combines the history and status of two ethnic groups to form a completely new racial category. In examining the results of this study it was found that participants were in fact sensitive to the differences between the "biracial" and "black" categories. As Table 4 illustrates the "white-black" and "biracial-black" IATs are only moderately correlated, thus these two IATs are not the same. These results suggest that "black" and "biracial" groups of people are seen as different and distinct groups when compared.

Additionally it was found that implicit racial bias extends beyond the "black" and "white" categories, in that overall participants showed a preference for lighter faces. While this finding is consistent with previous studies (Dasgupta et. al, 2000), the question that arises is if instead of just "white" being preferred could it be that there is a spectrum of lighter skin tone that is preferred. It is hard to say if society is moving

away from a strictly pro-white bias to a pro-lighter bias, however this is a question that could be further researched and especially since multiracial children make up a substantial number of the children needing to be adopted from the government foster care system (U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau, 2004).

One curious finding was that participants who explicitly stated that they were more open to transracial adoption on the OTRA scale had a stronger implicit pro-white racial bias on the "white-black" IAT. Perhaps this could be due to an increased awareness about their pro-white bias and the explicit statement could have been made in an effort to hide that bias or it may be an indicator that these participants are completely unaware of how strong their biases are. It is because of discrepancies like this that it is so important to research further aspects of transracial adoption; it is obvious from findings like these that approval for transracial adoption cannot be simply based upon either implicit or explicit findings. Rather it is even more important to discover how these two factors interact and potentially if and how they change over time.

This study was not without its limitations; the most obvious of these being the very low power level. In a post-hoc power analysis it indicated that given the number of participants the power level was only at twenty percent, which is very low given that convention in behavioral science studies is eighty percent. However, even with such low power there were some results, moreover, since this is a preliminary study the results that were found are compelling enough to prompt further research using these methods.

There are endless questions that can be explored through future research about transracial adoption. In future studies it may behoove the researcher to look at how transracially adoptive families function, what activities do they do or dialogues do they have and how does that relate to their implicit attitudes. It is also very important to continue to include the category of "biracial" or some other category that includes multiracial people; this is an area that needs to be further clarified and because of increasing multiculturalism research must be progressive about this issue. As was stated in the introduction the ultimate goal of any research regarding transracial adoption should be in an effort to help prepare families for this undertaking. We must work toward understanding if and how we can predict successful transracially adoptive families and how we can better serve the transracially adoptive community and multicultural families in counseling and support.

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Tables

Table 1. Target and attribute concept and stimuli for the IATs.










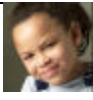


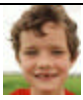





Target Concept	Concept Stimuli					
Black						
Biracial						
White						
Attribute Concept	Attribute Stimuli					
Good	Happy	Smile	Love	Joy	Pleasant	Great
Bad	Evil	Frown	Hate	Sad	Angry	Dirty

Table 2. Sample IAT dynamic.

Black Children and White Children IAT	
Black Children	White Children
Good	Bad
Black Children	White Children
Bad	Good
Black Children and Biracial Children IAT	
Biracial Children	Black Children
Bad	Good
Biracial Children	Black Children
Good	Bad
White Children and Biracial Children IAT	

White Children	Biracial Children
Bad	Good
White Children	Biracial Children
Good	Bad

The IAT dynamic is scored by taking the average time in milliseconds between pairing one and pairing two, e.g. how quickly did the participant associate white + good and black + bad in pairing one and then in pairing two white + bad and black + good. Additionally the order of the pairings is counterbalanced.

Table 3.

Descriptive Statistics			
	N	Mean	Standard Deviation
IAT D Measures			
White-Black	23	.21	.41
White-Biracial	23	.20	.35
Biracial-Black	22	.32	.31
IAT Scores in Milliseconds			
White-Black	23	64.15	201.87
White-Biracial	23	87.81	183.23
Biracial-Black	22	158.52	176.84
Openness Scores			
Openness	24	2.67	.70

Openness: 1= I strongly prefer to adopt a child of my own race/ethnicity; 5=I strongly prefer to adopt a child of another race/ethnicity

Table 4.

Correlations Between IAT D measures and Openness Question Score				
Participants (n=23, *n=22)				
	White-Black	White-Biracial	Biracial-Black	Openness
White-Black	--	.38	.32	.45**
White-Biracial		--	-.09	.09
Biracial-Black*			--	.12
Openness*				--

Openness: 1= I strongly prefer to adopt a child of my own race/ethnicity; 5=I strongly prefer to adopt a child of another race/ethnicity, **p < .05

Acknowledgements

Faculty Mentor: Anthony Greenwald, Ph.D.

I would like to thank the McNair program and the staff of the University of Washington McNair program for their support and encouragement throughout this process. Dr. Greenwald, I would like to thank you for allowing me the experience of working with you and your graduate students as well as your input and willingness to let me run with my ideas. Additionally I could not have made this study into a reality without the much-appreciated help of Sriram Natarjan. I would also like to thank Kristen Lindgren for reminding me why I love this and for being more than willing to drop everything for a crash course in statistics.

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My research interests include transracial adoption, multiracial identity development and attachment development in traumatized children. I intend to pursue a Ph.D. in either clinical or developmental psychology.

Balancing College Aspirations and Cultural Expectations Among Mexican Female High School Graduates in Manson, Washington

Bárbara Guzmán

Abstract

According to the 2000 Census, people of Mexican descent have a lower educational success rate than any other ethnic group. But in addition to racial issues (i.e. stereotypes), Mexican females encounter other factors that may prevent them from obtaining higher education. Traditional roles that evolve from parental or social responsibilities can play a factor in their decision not to pursue a higher form of education. The probability of coming into contact with females who experienced these circumstances during my attendance at Manson High School (located in North Central Washington) was very high. A ten-question informal open-ended questionnaire was applied to five Manson high school female graduates and one high school senior as a way to gather information on their backgrounds and develop an understanding as to why they have yet to pursue higher education. Based upon previous research and answers to the questionnaire, certain barriers (lack of support, family obligations, personal obligations, financial constraints, lack of information, and educational constraints) were identified as major themes that impacted the females in this research.

Introduction

Our current society has placed a large emphasis on the educated worker as a result of progress in technological methods. Specialization is highly valued in all sectors of the economy, with higher education playing a more important role in the development of a talent pool for work in the 21st Century. In this respect, a high school diploma today no longer provides the educational foundation that can help address the needs of our modern world. Today's youths are enrolling in higher education at larger rates than their predecessors. Unfortunately, the 2000 U.S. Census determined that Latinos have one of the lowest educational attainments. As with any racial group, females experience other factors that affect their educational attainment. These factors range from being the caregiver of the family, to expected future roles as a spouse. These cultural expectations often are deeply ingrained and are difficult for daughters to address within their own families.

As a young Mexican female, these issues have been evident and have played important roles with my childhood friends. My home of

Manson, Washington is a small community with a rich Anglo and Mexican culture. It is home to around 2,500 people that are either employed in the agricultural or the tourism industry. While I had a small graduating class (43 students), only two Mexican females entered college immediately after high school; I was one of the two. Some of the other Mexican females expressed joy that they were done with school while others had a desire to continue their education. As I continued to return to Manson, I find these girls still working at the local store or casino. Frustrated with the fact that these friends were being left behind and through my observations that other Mexican females from younger graduating classes appeared to be following in these footsteps, I began to wonder if something could be done to understand this situation.

When I first started to conceptualize this research, I felt I could find answers to my questions from members of the community, school administrators, parents, teachers, and so on because they all played a role in the education of the females in many different ways. After reviewing some of the literature and becoming more involved with my own research, I began to wonder if some of these girls even cared if they continued their education. From this perspective, I decided to turn my efforts towards understanding the factors that these girls believed prevented them from seeking a higher form of education. I expected to hear all types of issues to be identified, from financial need, to unsupportive parents, to a lack of interest. With this in mind, I developed a questionnaire that was designed to probe these issues further and to create a base of understanding that would reveal the females' decision to stay away from education at this moment in time.

Literature Background

There is quite a bit of research that looks into why Latinos fall through the cracks, specifically dropping out of high school or not entering higher education. It was quite difficult to find research dedicated to looking into the high school-to-college transition, and the factors explaining the success or lack of success of female students in this process. Initially, I was unable to find research that examined the status of high school graduates after several years away from education. As a result, I found it necessary to develop a broader framework that could capture some of the issues that I wanted to explore. These included: what are the cultural attitudes regarding education; what are the elements involved that influence how a student makes their choice to enter college; and what are the social, economic, and cultural barriers that challenges Mexican females' efforts to attend higher education. This approach proved to be more fruitful and allowed me to complete the research project. The next section identifies the key elements of the

framework I utilized to address my research questions. This includes: cultural awareness; decision making; decision making among first generation Chicana students; and aspirations among Hispanic high school students.

Cultural Awareness

As an ethnic group, Mexicans are considered to be one of the largest undereducated group in the United States. While only a few enroll in college after high school, many do not return after their first year of college. It is hard to pinpoint the exact reason that this occurs but many researchers believe that Mexicans have an assumption that higher education is a threat to the maintenance of their culture. Niemann, Romero and Arbona (2000) suggest that Mexican's educational aspirations is a behavior that is "inconsistent with traditional cultural gender roles and attitudes [that it] may lead to perceptions of conflict between relationship and education goals" for students (p. 47). Those students who are more conscious of their culture typically are influenced to maintain their traditional gender roles and behaviors (p. 48); for example marrying with the opposite sex from the same ethnic group, better known as endogamy. "Only ethnic loyalty consistently and uniquely predicted adherence to these attitudes. These results indicate that Mexican American men and women high in ethnic loyalty may be at risk for perceiving social costs of pursuing higher education" (p. 58).

Expectations based upon the Mexican culture can have strong effects on those who identify with it. "These beliefs about traditional gender roles and the pursuit of higher education may be affected by students' levels of distinct dimensions of cultural orientation, which include cultural knowledge, behaviors, values, and social interaction preferences" (p. 48). Typical expectations are to retain the language or marry within the culture. At the same time, Mexican females are susceptible to experience different cultural expectations because of their gender. These range from being the primary caregiver or marry and becoming a housewife. These researchers believed that Mexican females' higher education is not as valued compared to their male counterparts. Mexican females belong to a culture that emphasizes traditional gender role values in which these specific women "who strongly adhere to traditional roles are less likely to attend college" (p. 48). The thought of attending college may be viewed "as a threat to their future community involvement and acceptance, [in which] they may perceive conflict between relationship and educational goals" (p. 50). They may feel as though they need to choose "between gaining an education [or] remaining potential marriage partners for men in their ethnic communities" (p. 50). Although these assumptions do not speak

for all Mexicans nor is it indicative of Mexican females, they are just a few issues that have occurred that have and can influence some Mexican females.

Decision Making

According to Cabrera and La Nasa (2000) there is a three-stage process typical students go through when deciding to attend higher education that can begin as early as the 7th grade. This three-stage process contains the categories of predisposition, search and choice that affect and interact with one another.

Predisposition is the stage that “involves the development of occupational and educational aspirations as well as the emergence of intentions to continue education beyond the secondary level” (p. 6). This stage begins to develop when a student enters their middle school years. They are concerned with maintaining a good academic performance that will be critical in their future educational careers. This can be achieved by staying involved in sports, community, school activities and so forth. In this stage, parental involvement can have huge effects on their child’s educational plans either by motivational or proactive means. A parent applies motivation by type of expectations they have for their children; if they have high expectations, their children most likely will meet those expectations. If parents stay proactive with their children, it creates an incentive for students to discuss educational plans with their parents. The more parents stay involved, the more their child will try to stay on track with the development and maintenance of their future educational plans.

In the search stage, students begin to gather and incorporate information that deals with determining where and what form of higher education they would like to pursue. This stage begins around the “crunch” years for high school students, around 10th to 12th grade. Students interested in higher education seek as much information from as many sources as possible: teachers, counselors, peers, college recruiters, the Internet and so on. Parents can also be highly influential in this stage. Of most importance to students is information involving “the quality of the institution, campus life, availability of majors, and one’s ability to finance enrollment” (p. 9). Students with a low-socioeconomic status are less likely to find as many different sources as students with higher socioeconomic status because they solely rely on school counselors. But when these students do seek their school counselors, they are likely to pursue a higher form of education.

Under the Choice stage, students literally determine which higher form of education to apply to and then do so. Although under this stage other factors need to be considered first thus this stage can be

viewed in two ways, either by looking at economical factors or sociological factors. When basing a choice on economic factors, students estimate the “economic and social benefits of attending college, comparing them with those of alternatives” (p. 12). While a sociological factor “examines the extent to which high school graduates’ socioeconomic characteristics and academic preparation predispose them to enroll at a particular type of college and to aspire to a particular level of postsecondary educational attainment” (p. 12). Money has always been a major factor when students are trying to determine their postsecondary plans. Financial backgrounds have the ability to influence college destinations. As we expect to see, low-income students are highly influenced in attending higher education when offered forms of financial aids. But it is not to say that this is the students’ primary deterrent in choosing to apply to college, the primary deterrent would be based on academic preparedness and educational expectations. It has also been shown that parent’s educational background has an association with students’ educational attainment. Students who have parents that have no college background were “less likely to fulfill their plans of attending college immediately after high school” or attending school with little selectivity even if they are academically prepared (p. 15).

First-Generation Chicana College Decision Making

In Miguel Ceja’s dissertation (2001), he looked at the college choice process of first generation (the first in the family to enter higher education) Chicanas. He chooses to focus his study on Chicanas because they tend to be the more poorly educated women in society (p. 8). Historically, Chicanas are less powerful and hold a lower status than their Anglo counterparts, but also there are many stereotypical views that can hinder Chicanas’ educational status. This can include views such as education not being as valued for Hispanics as other ethnic groups.

There were three main factors that affect the college aspirations of these students: school, family and social networks (p. 44). Because these Chicanas are first generation students, their parents lack the familiarity of the college choice process thus these females rely heavily on outside sources such as teachers, counselors, etc. But even though parents typically could not provide insight or direct support into the college process they used alternative methods to show their daughters their support. They used their difficult work experiences as motivators for their daughters to obtain good grades. They would not necessarily talk about colleges with their daughters because they were unfamiliar with the themes but showed support through encouraging statements. This helped to reinforce the view to Chicanas that education is a process

that may help improve their economic and social standing (i.e., social and economic mobility).

Making decisions on pursuing an education beyond high school is difficult for all students but when the student is the first in the family to pursue a higher education there are other difficulties that arise. For one “first generation students are more likely than their peers to be from low-income families, have lower achievement and have lower overall degree aspirations” (p. 23). Many of the Chicanas were also the first siblings who tried to enroll in higher education in which these girls not only had to learn the college choice process but also teach their parents. This put these Chicanas at a disadvantage from their peers who did have educated parents because a larger sense of unfamiliarity existed. These particular girls in Ceja’s study were also unable to rely on their school counselor because there was only one counselor to 5000 students.

Interestingly when a student enters the predisposition stage, it is determinant of what form of higher education they will apply to. Those who began early (around sophomore year) were more likely to apply to a four-year institution while those who entered later (at their senior year) tended to apply to two-year institutions (p. 40). Entering the predisposition stage late does not allow students to effectively research different options open to them, creating a situation where they can only apply to what’s left or whatever they can find at short notice. It does not give them sufficient time to apply to a higher institution that they set their sights for.

When deciding upon a college, certain factors were weighed heavily for these Chicanas. Factors such as cost and leaving home were the main factors. If students were offered financial aid there was higher possibilities that they would attend a four-year college but some students didn’t have this fortune and were required to pay all their cost. At this point some of the Chicanas decided to attend community college instead to save costs. Leaving home was a fact that was new to some. Parents were more reluctant to support college choices that were not driving distance from home. Some of the Chicanas were uncertain of leaving home to pursue a higher education while others welcomed the idea.

Hispanic High School Students and their Future Aspirations

The National Center for Public Policy and Higher Education Public Agenda by John Immerwahr (2003) released a report that looked at 50 Hispanic graduating seniors from either San Antonio, Santa Clara (CA), Tucson, Chicago and New York and their futures. They found that they could classify students into three groups: College-Prep, Non-College Bound, and College-Maybes.

College-Prep were the type of students that were expected to go to college by their parents and counselors, more specifically there was no real reason why they would not attend. By the time they were interviewed, they had college acceptance letters and with no serious worries as to how it would be financed. College-Prep students resembled upscale families from other ethnic groups already researched in their attitudes of sending their children to college (p. 5).

Non-College Bound were students that lack necessary qualities to even begin to apply to college, qualities such as low academic skills, poor work habits, and a lack in their sense of direction (p. 6). The author noted that typically these students came from homes where their parents had low educational attainment, low-paying jobs, single-parent homes or constant relocation. Some of these social conditions hindered their possibilities in attending college, but just because they were Non-College Bound did not mean that they did not possess the qualities to do so.

The College-Maybes was a category of students that just fell in between the College-Prep and the Non-College Bound group. Some of these students had the same social conditions as the Non-College Bound students but were better prepared to enter the higher educational system. These were students that had some support from their parents and did well in school but were not as informed in their decisions in attending school. Immerwahr found seven obstacles that potentially influence these students:

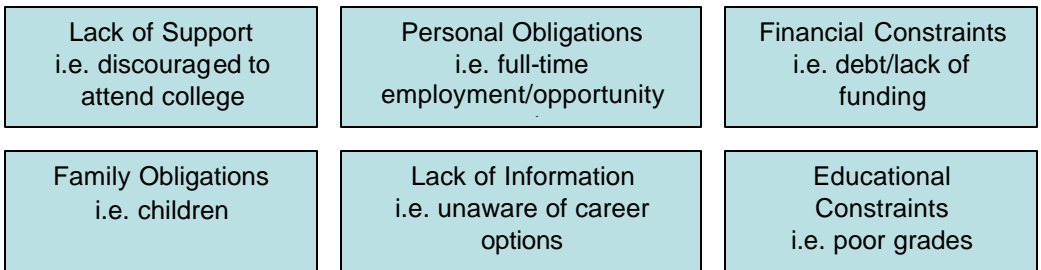
1. Children in Charge-Students made their own decision with limited influence from parents or school counselors. Their decisions were made based primarily by information found on their own efforts.
2. Conflicting Signals from Teachers-Students felt their teachers had low expectations about their futures.
3. Misinformation-Decision were easily affected by misinformation, such as a student wanted to enroll at "Boston Law" not realizing that an undergraduate degree is needed before attending Law School.
4. Other Seemingly Attractive Alternatives-Some students already were employed and were waiting to graduate so that they can work more hours. The idea of giving up short-term earnings for long-term earnings is a difficult one for those who belong to either the low to middle class to grasp, especially if they are uncertain what type of employment then can find after earning a degree.
5. College is for Specialized Training-Some of the students in this report was under the assumption that they needed to have a career track before entering college.

6. Poor Choices-Some students enrolled in technical school without really knowing what it detailed. Other students made choices that may seem like good decisions but they were unaware of the options they had.

7. Limited Grasp of Planning and Organization and a Lower Sense of Efficacy-The author describes, "...attending a focus group is analogous to going to college. It requires planning, discipline, follow-through, and resources [and]...a certain amount of trust" (p. 17). In the study, the College-Prep students were more likely to attend the interview and on time. While the other two groups were more likely not to show up. If students do not have these qualities, they may not be able to accomplish their goal, however attractive the option is.

Framework for Understanding the College Decision

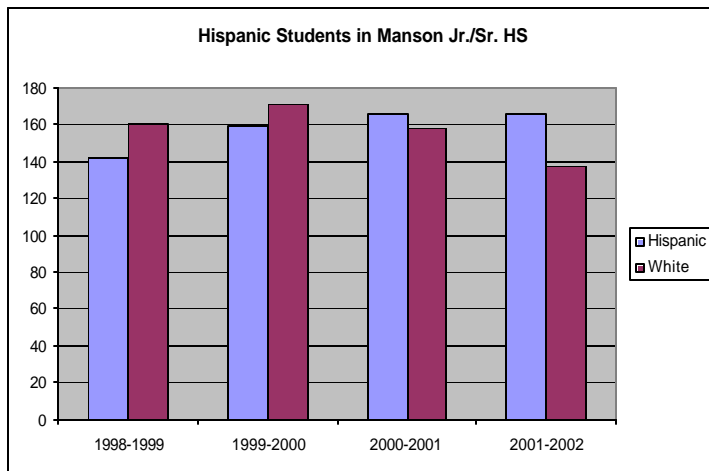
Based on the review of the literature, the following factors may be useful for explaining the college decision for Mexican female students. These factors include:



Methods and Research Design

My hometown of Manson, located in Chelan County in the North Central part of Washington, is a small town of approximately 2,500 people (see map for location in the state). The town is unique for the fact that only an Anglo and Mexican population exists there, no other racial group has settled in the town as of today. Manson also was once a very prominent apple producing area. Each season required many workers to fill the labor needs for each producer. With the demand for a more stable labor force in the apple industry, more and more Mexican migrant workers began to make a permanent home (settle-out from the migrant stream) in Manson.

As a result, the towns' Mexican population has grown quite substantially over the past several years, as evidenced by the presence of more Mexican children in the school system than Anglo children. Similarly, the population in Chelan County has also increased as Mexican/Hispanics make up about 20% of the countywide population.



Chelan County 2000 Census		
Hispanics	% Hispanic	Total
12,831	19.3	66,616

Yet the town of Manson cannot be compared to other towns dominated by Latinos in the United States; there is not a big Mexican cultural presence that exists in the town since it is still dominated by Anglo culture. Thus Manson seemed to be an ideal context where I could identify many females who could fit the profile I was seeking to examine.

My main objective was to identify Mexican females who had been out of the educational system for some time. I also felt it was important to select one current undecided high school senior to understand whether the process of not attending higher education after high school is something that is conceptualized among younger Mexican females. Participants were then selected based upon the following criteria: being female, senior or graduates of Manson High School, and girls who have not enrolled in any form of higher education. Participants were identified using personal contacts, specifically focusing on females that I graduated with, as well as referrals from peers. Due to the small number of people in my hometown and because of time constraints, the final sample for this study consisted of six female participants. Once I identified my participants, I approached these females informally and asked if they would be willing to answer a questionnaire as a way to explore what they saw as the factors that lead them to discontinue their education. All of the participants were asked to sign a consent form that read as follows:

I hereby give my permission for the University of Washington to use information that I provide for research only. I have been made aware that my confidentiality will be protected and in no way will my information be discussed outside of this research. I also provide my consent to be recorded throughout the research period. If at any time I do not adhere to this agreement, I understand that I can cancel this agreement by notifying the McNair Foundation or the Educational Identification Program at the University of Washington.

Once the participants signed the form, they were provided with a copy of this consent form.

Interviews were mainly conducted on the weekends of February and March of 2004 because of practical reasons (e.g., I attended school during the week) and because of my research schedule (my project needed to be completed by the end of spring quarter). Each participant was allowed to choose the time and location of the interviews, which in most cases, happened to be at their place of residence. The questionnaire was answered in an open-ended, informal setting and recorded (using a mini digital recorder).

The questionnaire included some of the following questions:

1. How did you do as a student in high school?
2. What were your initial plans in high school?
3. What are you plans/goals now?
4. What kind of support did or do you receive from people when you tell them of your future plans?
5. How do you perceive college?
6. What was the kind of factors that stopped you in seeking a higher education?
7. What does your family say or think about college?
8. If you could go back and change anything in regards to education, what would you change?
9. How involved was your family in your education?
10. Who encouraged you to seek a higher education, if so how did this make you feel?

The research protocol I employed allowed the females to participate in whatever way they felt most comfortable; for example, one interview was conducted in Spanish, while other interviews were conducted while they cared for their children. Once these interviews were recorded, they were later transcribed (copies of all transcribed interviews are included in the appendix).

Results

The females in this study to some extent mirror the characteristics that are identified in the literature: they were first generation, Mexican females, and who were making a decision of attending higher education while in high school. Based on my assessment of the participants, I found that all the females could be considered what Immerwahr (2003) calls College-Maybe students, students who had most of the qualities to attend college but did not concentrate on attending. These were students who came from families with low educational attainment, low-paying jobs and so on. The girls all had GPAs above 3.0, most seemed very bright, and all of them considered applying to higher education; but as Immerwahr suggested they were not as informed in their decision making process as College Prep students (p.15). From the conversations that I had with each female, I was able to categorize parts of the conversations into several obstacles. Based upon the literature, these obstacles were determined to be: lack of support, family obligations, personal obligations, financial constraints, lack of information and educational constraints. I will discuss each of these areas in relation to the responses that were provided by the participants.

Lack of Support

Based on my own experience of attending school with most of these girls in the study, I had the assumption that they did not care for school and did not want to continue their education because they were not really involved in different school activities. By their outward attitudes, it seemed that they had other interests rather than a scholastic one. This raises an interesting question in my mind: was my perception of these girls the same as others in my school population who may have assumed that they were not really concerned with their education. In my estimation, it was difficult to tell if these females suffered from pre-existing assumptions such as stereotypes that they had internalized and projected to others. The response from Subject 1 is somewhat revealing about this issue. She said: "I actually thought that maybe, you know, I'm Hispanic/Mexican, um I couldn't achieve that [applying to college and scholarships]." Even if these assumptions were not evident, it is possible that this is how the girls suspected they were viewed from the outside.

	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6
Age	18	23	19	23	21	23
Occupation	Student	Grocery Clerk	Sales Asst. & Hospital Interpreter	Cashier & Cage Cashier	Cashier	Apple Shipping Supervisor
Family	Single	Married, 1 child (4yrs old)	Single	Married, 1 child (2 yrs old)	Single, 1 child (3 yrs old)	Married, 1 child (2 month old)
Year Graduated from High School	2004	1999	2002	1999	2001	1999
Generational Status	2 nd	2 nd	1 st	2 nd	2 nd	1 st
Educational Goals	Beauty school or commun. college	Technical school in Texas	Beauty school or commun. college	Commun. college	Maybe commun. college	Community college
Career Goals	Intl. business or own a salon	Mechanical or Accountant	Physician Asst. or own a salon	Accountant for major corporation	Unsure	Agricultural type of employment
Parent's Education	Elem.	Elem.	Unknown	Elem.	Some Elem.	None

Table 1: Demographic Characteristics of Participants

Another theme that emerged is that these participants articulated a notion of a lack of support from people in their attainment of higher education. A question in the questionnaire asked what kind of support the girls felt they receive from people when they tell them about their future plans. Subject 1 said: “they’re very shocked ‘cause they see me and as you can see I look like I’m really mean and like I’m not going to achieve anything, you know, like those Mexican girls that, you know, hang out with, you know, the bad crowd and stuff like that.”

Subject 4 explains: “I had to kind of basically support myself and nobody was really there to tell me to do this or do my homework.” It appears that no one provided them with the benefit of the doubt and they continued school with this feeling of isolation.

All the girls indicated their parents or parent figures as their main supporters when it came to enrolling in higher education. But there was not a huge emphasis placed on them to actually enroll; the parents were quick to accept their daughters’ decisions not to attend college. As

Subject 2 explained: “they didn’t exactly say you have to, have to...they just would say like ‘if you want to go to college, you have our support...’” Subject 1 said about her mother’s support: “I mean she influence[d] me to go to college but not pressure [me]. This does not suggest that their families did not care about their daughters’ education; they did not realize how to respond to their daughter needs. Since the girls were not familiar with the educational process, they did not know how to ask or seek clarification on the issue. Subject 5 was asked whether her college-educated brothers helped her in seeking educational goals. She said: “I think it would be better if they help[ed] me in a way ah but there some things I have questions about but I guess if I ask them, they’d probably let me know...” The most profound lack of support in this study was from Subject 2. She said: “my husband is not very...he wasn’t very supportive in that, that choice of college and that is what kind of stopped me [in seeking a higher education].” Niemann, Romero and Arbona (2000) suggest this conflict occurs when relationship and educational goals cross. Thus it can affect any thoughts of attending college (p. 50).

The girls did have other outlets of support; their peers would try to refer them to the schools they’re attending as Subject 1 said: “...my very good friend Vanessa...right now she’s helping [me] in my financial aid and my scholarship and right now she’s helping me with my applications for college ‘cause she already got accepted and she’s waiting for me...” Or as Subject 2 implied, it wasn’t support she received but examples she witnessed. She said: “Who encouraged me? My friends that are in college...by looking at my friends...I think it’s better [to] have an education and not work in Manson Bay Market like for so long.”

Although these girls did not have people lining up to provide them with support nonetheless they had some support. However, I believe these girls yearned for more direct support. For instance, if Subject 4 had the chance to talk to herself back when she was in high school, she said that she would “just try to be there for her, whatever it was, even just as a friend, you know, listen to her whatever it was or school, anything.” In most conversations when they were asked the hypothetical question if someone pulled them aside and told them “they believed they had what it takes to be successful in higher education would it influence them,” most believed it would help. Subject 3 says about direct support: “I don’t think I need it but um it probably would um you know make a difference, I’m not sure, it could be.” Subject 5 echoed similar thoughts:

Interviewer: Do you think it would be easy if maybe a teacher pulled you aside and say “ I think you have what it takes to keep going.” do you think that might<

Subject 5: >yeah that would help a lot. Yeah if they see that I have the ability to do ah what there is to do and if they told me “you can do it” and really knew that I could, I would try my best and maybe I could, I could do it, yeah.

Or Subject 6:

Interviewer: ...were people coming up to you...and tell you “oh I think you’re really good at science, you should go to this school” or<

Subject 6: >*ah fueron algunos maestros que dijeron eso ah y te digo eso era lo que me empujaba más de ir al colegio pero solo fueron algunas veces y dejaron de hacerlo.”*

>ah, there were some teachers that said that and I tell you that was what push me more to go to college, but it was only a few times and they stopped doing it.

Given their comments, it is apparent that these girls really yearned for a type of support that would have allowed them to be more confident in their decisions. Although they did have the support, some of their support came from people who did not know how to answer their needs. This highlights the dilemma first generation students face when they have limited information about the college choice.

Family Obligations

Family obligation was another area that appeared to limit the ability of these girls to make a decision on whether or not to attend college. Four of the six girls were mothers and have been married at least two years while only one was a single mother. The husbands and children were major components to the girls and they based their decisions for the future around their families, which is quite normal. Researchers have said that girls who strongly adhere to traditional roles are less likely to attend college (Niemann, et. al., 2000). As such, having this extra component to consider when making decisions about pursuing their educational goals at times puts them in difficult situations. For example, Subject 2 said: “my goals were, oh, going to school again, going to college. I planned on going to UTI in Texas to work on cars, but um...I couldn’t because then I got pregnant.” She specifically said: “I had my baby, and then I got married.” Subject 4 explained that her educational goals stalled because she got married. She said: “well, I got pregnant and then I had my son.” Subject 6 said about her family obligations:

“como horita es por mi niña está chiquita pero más pronto, más adelante que está poquito más grandecita, yo pienso que si se va poder, eso de ir. Well right now it is because of my daughter, she is very small but soon, further down the road when she is a little older, I think that it will be possible, doing that of going.” Subject 4 had the same concerns. She said: “now that my son is big enough...I want to go back to school.”

Niemann, Romero, and Arbona (2000) again say that Mexican females are susceptible to experience different cultural expectations because of their gender (p. 48). At other times they face the difficult task of trying to consider whether to compromise between married life or attend school. For example, Subject 2 said: “...he (husband) doesn't really want me to go to college because of my little girl...but he wants me to go until the baby goes into like maybe first grade...doesn't have to come home in the middle of the day and I'm not there...”

In other instances, the participant's attention towards their child affected their educational career. Subject 5 said:

Interviewer:...how do you feel you did as a student?

Subject 5: Hmm, throughout the years I think I tried my best but my senior year, I think I didn't do my best best...I had appointments and ah I was pregnant at the time so um I had many appointments and I missed school a lot and then when my baby was born, I also missed a month of school...

While I am not suggesting that family obligations had negative impact on these girls' futures, it is clear that they shifted their priority to their families and were no longer able to focus on their education as easily as before. Subject 2 sums it up when asked if she didn't have her daughter if she would have continued studying: “oh yeah. Yes definitely, if not Texas I'd probably go somewhere else...”

Personal Obligations

Many of these girls had personal obligations that could be better described in terms of opportunity costs. Again, Immerwahr (2003) mentioned attractive alternatives/personal obligations existed as one of the seven obstacles that affect College-Maybe students (p. 17). Many of the decisions were based on either entering the workforce to earn an instant living or impart these necessary earnings to attend higher education. Subject 3 explained: “I was on my own and it was harder for me to keep it steady on my school work because I had to work.” This comment could qualify as either a financial constraint or educational constraint but because Subject 3 lived on her own she had to choose what was best for her at the time; employment over attending school was the

choice she made. From her perspective finances, schooling and then herself was her order of importance in her life.

Other girls had different incentives other than weighing the cost of leaving their employment for school. Subject 4 said:

“at first I wanted to go to school and become a bilingual specialist or cosmetology but then...I wanted to take some time off...because I wanted to work and save some money...I didn't really want to study anymore. I didn't want to-I wanted to take a break and work and um...I just didn't-I didn't feel like going to school...”

Subject 6 said that her goals were to go to college but mainly financial reasons stopped her. She said: “*estaba (el colegio) muy caro y al ultimo pues ah decidí major trabajar.* It (college) was too expensive and in the end well I decided to work instead.”

Other participants had the perception that their personal obligations would only last a short while. Subject 5 was asked what had stopped her from attending higher education. She said: “um paying off my car...I wouldn't be able to...go to school and be working and paying off the car...I think once I get that over with I think I'll have relief and try to do something.” Subject 3's top priority is to: “...finish paying off some stuff I have to pay and then hopefully by the next fall, not this year but next year, I'll start school.” It is hard to tell if these were costs that would require these females to be paying them for years to come or not. These comments point to the complexity of the decision-making process, circumscribed by serious financial considerations.

Financial Constraints

Many of these girls can be considered low-income or middle-income; none of the participants in the research belong to the upper-income level. Ceja (2001) said: “first generation students are more likely than their peers to be from low-income families...” (p. 23). Thus for many of these females, it is necessary for them to evaluate the financial obligations of attending post-secondary education very seriously. Although Subject 3 wanted to go to college, her situation did not permit her to rely on her parents if she encountered a financial obstacle. Her supporters tell her to ignore the financial obstacles. She said: “...they just tell me to go for it, they tell me there's a lot of financial aid you can go to and my sister, she can't really help me out financially.” She explains that it is difficult for her to attend college due to all the financial trouble she has had in the past. Being able to pay for her education before attending college is a must for her. She said: “I want to save up before actually going or have a back up plan so that in case I don't get

financial aid or something and kept going and-I don't want to stop when I go to college...I want to keep going as much as I can..." Finances always remained a major factor when deciding to attend college. Subject 1 said: "money. It's always an issue." It has affected her decision to the point where she is hoping to follow a friend to the city so they can room together and save money. Subject 6 wanted to enroll into college a year after her high school graduation. She said: "...*empese a trabajar y al ultimo no tenía dinero para el colegio. Al ultimo poco a poco ya fui dejando eso y empecé a trabajar y ya no, ya no sigue al colegio*. One because I went into working and in the end I didn't have money for college. In the end little by little I started leaving that (the idea of college) and I started working and I didn't, I didn't continue onto college."

All these girls understood that there is financial aid available for which they may qualify for but this idea did not ease their worrying, for example Subject 3 said: "...I know there's a lot of financial aid out there, but then something always happens and then you don't get financial aid anymore and I don't want to be stuck..." Subject 5 said: "um financial aid, see how we [her family and herself] can get help there and if not we can go to loans. Or try scholarships and see if I can apply for any of them." Not only did they not trust receiving financial aid they were under the assumption that they must save quite a bit before applying, not realizing that this can affect their qualification for financial aid.

Interviewer: And how have you and your husband decided that you're going to...go to school like financially...?

Subject 4:...that's why we're both working both jobs, two jobs, to save money just in case we may need it.

This lack of knowledge or information can really undermine these girls' educational experience if it continues to persist into the future.

Lack of Information

Most of these participants are considered first generation, meaning that they are the first in their families to receive any type of education beyond elementary. In addition, many of their parents are still new to the United States' educational system. This creates a lack of knowledge when it comes to their daughters' educational needs. It also creates misconceptions for these girls because they do not have anyone that they trust who can explain to them the whole process of applying and attending college. Most of the females did not know what really occurs at a college. When I asked the question, what do you think college is like; I received a variety of answers. Subject 1 said: "hmm,

well from what I heard, you know, lots of parties...and then I heard like the teachers don't really care, you know, I mean, you just have to turn in your assignments and if you don't turn [them] in, well too bad for you." Subject 2 said: "college is...very hard, very stressful and fun." Subject 5 said: "I think it, it's a lot um of um single person work like not very much help from the teachers as there was when in high school..." Subject 5 is most concerned about this idea because she feels that she needs more one-on-one help, but no one has explained to her that there are tutoring centers where she can receive the help she seeks.

What I found most interesting was the assumption that before entering college, a career path must be determined. Subject 5 explains first: "...I didn't really know what ah what career to take but I was just looking around, investigating, looking through the Internet seeing different careers...I would spend hours looking and um try to figure out which ones I would like the best." When asked if she ever thought she could attend college without determining a career first, she says: "I could but I never really thought about it...I didn't really think about going to school first, I would just think about searching for a career first and then going to school." It is hard to say if while searching for a career, she also searched for different school that offered what sparked her interest.

This lack of information could also be very damaging to these females' educational career. For instance Subject 6 during her senior year of high school was very close to applying for colleges and scholarships, but did not get the applications in time for the deadlines. When asked if any of the teachers or counselor told her about the deadlines, she said:

"no, en realidad no. Una que no nos dijeron y luego aparte yo no pregunte. No tanto fue culpa de ellos si no también fue la mía que no pregunte cuando era la fecha...no hubo tanta información que me dijeron a mí de eso. No, in reality no. One was that they didn't tell us and then aside from that I didn't ask. It wasn't so much their fault but also it was mine that I didn't ask when the due dates were...no there wasn't a lot of information that they gave me about that."

If she had made the deadlines for scholarships and college application Subject 6 may have already enrolled and finished her post-secondary goals. Unfortunately, situations were created that did not allow her to pursue her goals.

Educational Constraints

Education constraints can occur in a variety of ways according to Ceja (2003). For example, when a student begins the predisposition

stage this is determinant of what type of higher education students will apply to (p 40). Or it can occur by not staying focused on academic records. While in school, some of the girls made costly mistakes that could have been easily resolved such as Subject 3's education constraint. She said:

“Well the first two years, I think I was a pretty good student and um since the age err since 7th grade, I was an ‘A’ student all the way up to my sophomore year but then after that um the last two years, I don’t think I did very good...it was harder for me to keep it steady on my school work because I had to work...”

Subject 5 said: “...I did pretty well except for my last year but I think if I just would have done just a little more effort in that year than I would have had better grades and a higher GPA...” But there were other problems that Subject 3 experienced that were not as easily remedied. She said:

“I wanted to do...Running Start...I wanted to get two years of college over with and graduate, you know at 17, but...I couldn’t do...I was working at 5 in the morning and I would go to school like at 12[pm], so they were already giving me credit for working and um I couldn’t go to Running Start...”

Subject 1 had a similar experience when applying to different types of colleges. She said: “well since I messed up my whole schedule in high school I, I didn’t have like a class that I can actually take for Algebra II. That’s the only thing I needed to actually...need to...go to a university but right now, I’m applying to two year colleges.”

This answer did not seem as a disappointing decision until later when Subject 1 reveals:

“...I rather go to a university because my like career that I’ve always wanted ever since I was a little girl was a marine biologist and you need to go to a university in order to do it and I guess my dreams were kind of down the drain when I didn’t actually get into Algebra II because I scrambled all the classes...”

Not only can low grades or missed opportunities affect ones educational career but limited grasp of the English language can reduce most chances of being successful. Subject 6 entered the country when she was 13 with no knowledge of the English language. She said: “*Eso fue algo que, que este, como que me atraso um poco más porque no sabía el idioma*. That was something that put me behind a little more because I didn’t know the language.” When asked if she would have

known English, if she thought that she would be in college today, she said: “*Si, yo pienso que sí*. Yes, I think so.” These educational constraints were a major factor directing what these females could do after high school.

Discussion

My research parallels what the literature says about the factors that influence the college decision for Mexican students. Most notably family obligations and personal obligations appeared to be of significant influence in whether or not the females pursued any form of higher education. From my conversations with the girls, I was able to identify several key areas that may explain why these participants did not pursue additional education. These include: limited goal setting, dual expectations/delayed gratification, and the “mañana syndrome.”

Limited Goal Setting

Entering the research, I did not expect to hear any of the females express a desire to return to school. I was surprised to find that all of them did want to continue their education. As I listened to the educational goals from each participant, I began to notice a theme emerging that I have termed here “limited goal setting.” Table 1 shows each subject’s educational goals, which includes: enrolling into community college or technical schools. It is understandable for the females to choose these types of college because they are the most conveniently accessible, due to their family responsibility. But what was most perplexing was that none mentioned transferring to or enrolling in a four-year school after obtaining an Associates Degree or the equivalent.

While talking to the girls it was clear that each desired to reach a certain level and then discontinue their education. None at this point considered education beyond four-years. When asked if they would consider pursuing an education that would enhance their current goals, most had not thought about it or did not believe it was right for them.

Interviewer: “...do you think once you get into college, you’re like...I’m not going to be an [physician] assistant to anyone I rather be the doctor...”

Subject 3: I would probably-I’m not sure yet at this point, I might just, you know, get ahead a little bit more but um I’m not quite sure.

It is hard to say if this is due to low confidence in their ability to become excellent students, but it affected the types of goals they considered.

Dual Expectation/Delayed Gratification

As discussed earlier, there were four mothers in this study who needed to consider their family’s needs before thinking about continuing

their education. Many of the mothers wanted to wait until their children were older before they could start the process of applying to higher education. They felt it was more important to do a good job of raising their family than to satisfy their own educational aspirations. Subject 4 said: “now that my son is big enough...I want to go back to school so I want to go back.” Subject 2 said: “my goals right now are send my kid to school and then I’ll start going back to school.” It is only a matter of time to tell if the girls will attend once their children are of appropriate age.

Mañana Syndrome

The girls in this study did not have one specific reason as to why they are not attending higher education. There are times that I felt that the girls did not want me to judge them thus they told me what they thought I wanted to hear. Education was an issue that everyone verbalized as important to their future, but they all provide an excuse that prevented them from pursuing additional schooling. Some of the girls were more concerned with what people would think of them if they enter school and did not finish. Others wanted to increase their finances before attending but have continuously mentioned this since high school. I have termed this situation as the *mañana* (tomorrow) syndrome. It is this notion that they will pursue their goals but first they must do something else, it can wait until *mañana*/tomorrow or the next day and so forth. Instead of being achieved it never is attained.

Conclusion

A questionnaire was applied to five high school graduates and one undecided senior to glimpse into the their thought process when it came to higher education. From the literature, six obstacles were recognized that may help explain the college decision choice: lack of support, family obligations, personal obligations, financial constraints, a lack of information, and educational constraints. Each girl was affected one way or another by these obstacles. My research highlights that the students are willing to consider higher education if they believe they have the background and support to make it happen. Our challenge is to offer this information to students so they can fulfill their educational aspirations.

The decision to apply a questionnaire to the six girls has been a great eye opener. I came to learn that these girls are no different than any other Mexican female in the United States. A low educational attainment exists, poor choices are made, financial problems occur and many other obstacles that affect Mexican females desire to continue their education. By looking into the issue of low educational attainment for

Mexican females, it is my goal to express these findings to these girls so that other Mexican females from Manson will be influenced to begin their educational careers.

Unfortunately, more research is required with a larger sample of Mexican females in a variety of backgrounds to truly represent Mexican females in the United States to create a sort of forum to inspire other Mexican females to seek higher education in the United States.

There are no simple answers to the educational policy challenge facing Latinos. We cannot provide a solution without seeking additional funds but realistically, these challenges cannot be solved with just money. A more welcoming stance towards minority students and their parents is needed before any change can be administered. Once this is achieved, classes must exist that familiarize educators with cultural differences. Outreach programs should be put into place that create more one-on-one relationships with students, parents and teachers; this will allow students to realize that they are on their teachers' minds. For example, if there is an after-school program that teachers are familiar with, they could provide information and encouragement. On a different note, studies have shown that children's educational aspirations are highly influenced by their parents and if this is the case, more emphasis should be placed on parents. Informational classes should be created that begin to explain the different types of post secondary schools (not just limited to undergraduate but graduate schools as well) as well as options for majors and careers to students and parents. If we begin to restructure these policies at a national level, then we can apply them individually to urban and rural schools. Latino students have great potential in becoming the next generation of scholars, but we must begin to address them early in their education to guarantee success.

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Acknowledgments

Faculty Mentor: Gabriel Gallardo, Ph.D.

Foremost I want to thank the girls and their families; they allowed me to enter their homes, meet their families and answer questions they, at times, felt uncomfortable answering. Even though I knew some of the girls, I was able to learn quite a bit of each of them and was unaware how they felt in high school. I hope they can achieve their full potential in the future. Most of all I want to thank Gabe Gallardo; I probably would not have been able to complete my research without all his guidance. He really taught me the ropes when it comes down to research. Gabe sometimes took two hours out of his busy schedule to make sure that I had the correct information; he also was just as excited as I was about my findings. Thank you Gabe, I cannot express to you

how much I appreciate your help but I will continuously bother you at work. Para mi Mama y Papa: quiero agradecerles por su participacion en localizar las muchachas para mi investigacion y tambien por no criticar me por todas mi viajes de Seattle a la casa; los quiero. A special thank you to everyone at EIP/McNair: Steve Woodard, Greg Yamashiro, Alyson Brooks, Rahel Bisetegne and Sarah Augustine. You all let me bombard you with my 101 questions and frustrations that occurred during my research. You guys are a unique and talented support system. Thank you to my brothers, Meg MacDonald, Manuel Garca, Raul Anaya, Linda Ando, my fellow McNair Scholars and everyone who gave me pointers for my research.

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Behavior Signatures in Youth Sport Coaches

Nhi Nguyen

Abstract

The primary purpose of this investigation is to examine the effect of game status (i.e. winning/tied/losing) on coaching behaviors in the context of youth baseball. Coaching behaviors have been identified as important predictors of children's enjoyment and experiences in youth sports. Children who perceive their coaches as being supportive, instructive, and less punitive typically report lower levels of competitive anxiety, greater levels of enjoyment and intrinsic motivation, and higher self-esteem. Participants in the current investigation were 51 male baseball coaches from the greater Seattle area. Each coach was observed during competition. A total of 202 observations (games) were conducted with an average of four observations per coach. The Coaching Behavioral Assessment System (CBAS, Smith & Smoll, 1990) was employed to evaluate how frequently coaches engaged in supportive, punitive, and instructional behaviors. The game status and coaching behaviors were recorded during each inning. A one-way MANOVA was conducted to examine game status related differences in coaching behaviors. Significant main effects were observed for supportive and punitive behaviors. Post-hoc analyses identified that coaches were more supportive and less punitive when their team was winning or tied, rather than losing. The discussion focuses upon the situational effects of game status on coaching behaviors and its implications for the enjoyment and continued involvement of young athletes.

Introduction

Organized athletics have long been shown to have positive effect on child development (Smith et al., 1978). Participation in youth sports helps in shaping attitudes toward achievement, perseverance, and risk-taking and builds the ability to tolerate frustration and delay gratification. Children also learn about team cooperation, unselfishness, and other motivational factors. Moreover, the physical health benefits associated with physical activity are well documented (Smith et al., 1978).

With over 26 million children participating in community athletics in the United States, youth sport coaches are a key figure in providing technical instruction, giving evaluative feedback, and influencing self-concept (Smoll et al., 1993). Children who perceive their coaches as being supportive, instructive, and less punitive typically report less competitive anxiety, and greater enjoyment, intrinsic

motivation, and self-esteem. Thus, coaching behaviors are important predictors of children's enjoyment and experiences in sports.

The stability of coaching behaviors across game situations is an issue of theoretical and practical importance. Do coaches act in a way that is stable and consistent despite their teams' game status? There has been a long standing debate as to the existence of consistent individual differences in behavior across situations. A study by Shoda et al. (1993) examined the behaviors of children across positive and negative interpersonal situations with both peers and adults. They found that there is a stable pattern by which individual behaviors vary across situations. Moreover, the researchers found that by looking at individual differences rather than group means, the patterns were distinctive for each individual. Thus, they concluded that individuals have stable "profiles" of behavior, which they called, "behavioral signatures."

The current paper will examine the behaviors of coaches across winning, losing, and tied situations using the Coaching Behavioral Assessment System (CBAS, Smith & Smoll, 1978), an intricate coding system that allows observers to identify supportive, punitive, and instructive behaviors. We predict the following hypotheses:

1. Coaches will be more supportive when winning rather than losing
2. Coaches will be more punitive when losing rather than winning
3. Instruction will not vary with game status
4. Coaches will exhibit distinctive yet stable behavioral profiles (i.e., behavioral signatures) across game situations (win/tie/loss).

The ability of identify individual coaching patterns during different situations is vital in the effort to improve youth athletics. Discussion of research implications will follow.

Method

Design

The study design is a large-scale field research program where coaching behaviors were recorded, classified as supportive, punitive, or instruction, and compared through winning, losing, and tied game situations. Individual patterns of behavior across game situations are also considered.

Participants

The study involved 51 male coaches from three Little League baseball leagues in the greater Seattle area. The leagues were divided into three levels: minors (mainly 8-9 year old boys), majors (mainly 10-12 years

old), and seniors (mainly 13-15 years old). Some variations in ages can occur as youth can play up or down in levels. There were 23 minor coaches, 17 major coaches, and 11 senior coaches. At the conclusion of the season, the coaches completed the Coaching Philosophy Questionnaire privately in their homes. A total of 13 coaches refused to participate in the project.

Procedures

With their written consent, coaches were observed by thirty University of Washington undergraduate research assistants trained in CBAS scoring methods. A total of 202 baseball games were observed with a mean of 3.96 games per coach. An average of 1,122 behaviors were coded for each coach during the course of the season, totaling 57,213 behaviors total across 51 coaches. The behaviors were recorded during and between innings.

Situational factors that were recorded included the inning, the status of the score (i.e. winning or losing) at the end of the top and bottom of each inning, and whether the coaches' team was playing on offense or defense. The time duration of each inning and the period between each inning was also noted.

Coaching Behavior Assessment System

The CBAS was developed to permit the observation and coding of coaches' behavior during practices and games. Developed over a period of several years using social learning theory, CBAS identifies 12 behavioral categories classified by the following (Smith et al, 1978):

Reactive Behaviors	Responses to desirable performances	<i>Positive Reinforcement or Reward (R)</i> . A positive reaction, verbal or nonverbal, by the coach to a desirable performance by one or more players.
		<i>Nonreinforcement (NR)</i> . A failure to reinforce a positive behavior.
	Reactions to mistakes	<i>Mistake-contingent Encouragement (EM)</i> . Encouragement of a player by a coach following a mistake.

		<i>Mistake-contingent Technical Instruction (TIM)</i> . Telling or showing a player who has made a mistake how to make the play correctly.
		<i>Punishment (P)</i> . A negative response, verbal or nonverbal, by the coach following an undesirable behavior.
		<i>Punitive TIM (TIM + P)</i> . Giving technical instruction following a mistake in a punitive or hostile manner.
		<i>Ignoring Mistakes (IM)</i> . A lack of response, either positive or negative, to a mistake on the part of a player or the team.
	Response to misbehaviors	<i>Keeping Control (KC)</i> . Responses that are designed to maintain order.
Spontaneous Behaviors	Game-related spontaneous behavior	<i>General Technical Instruction (TIG)</i> . Spontaneous instruction relevant to techniques and strategies of the sport (not following a mistake).
		<i>General Encouragement (EG)</i> . Spontaneous encouragement that does not immediately follow a mistake.
		<i>Organization (O)</i> . Organizational behavior that is not intended to influence play immediately, but sets stage for play by assigning duties.

	Game-irrelevant spontaneous behavior	<i>General Communication (GC)</i> . Interactions with players that unrelated to game situations or team activities.
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Observers using the CBAS station themselves at a point from which they can observe the coach in an unobtrusive manner. Observers do not introduce themselves to the coach, nor do they indicate in any way that they would be observing him/her. Observations are recorded by writing the behavioral codes (e.g. R, P, TIM) as the behaviors occur. Observers are trained using training manuals, group instruction of the scoring system, written tests requiring trainees to define CBAS categories, videotaped sequences of coaching behaviors, and extensive practice in actual field settings. Reliability studies have shown that mean consistency of scoring is 96.4%.

Exploratory factor analysis techniques showed that the following behaviors loaded on supportive, instructive, and punitive types (Smith et al., 1983):

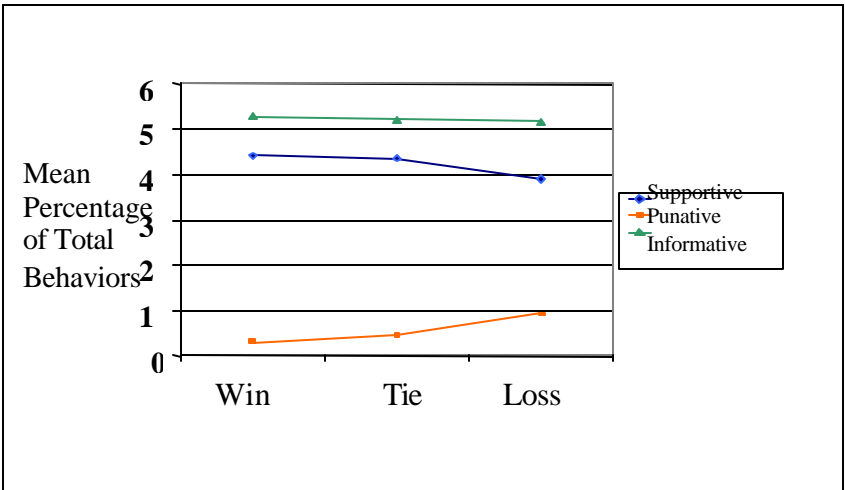
Code	Behavior	Type of behavior
EG	General Encouragement	Supportive
EM	Mistake-contingent Encouragement	Supportive
TIG	General Technical Instruction	Instructive
TIM	Mistake-contingent Technical Instruction	Instructive
P	Punishment	Punitive
TIM + P	Mistake-contingent Technical Instruction with Punishment	Punitive

Results

It was hypothesized that there will be significant differences for supportive and punitive behaviors in winning, tied, and losing situations and no main differences in instructional behaviors by game status. A one-way MANOVA was conducted to examine situation-related differences in coaching behaviors, and as predicted in Hypotheses 1

through 3, significant main effects for Game Situation were observed for supportive, $F(2,2099) = 9.89, p < .001, \eta^2 = .01$, and punitive behaviors, $F(2,2099) = 57.03, p < .001, \eta^2 = .23$. Instructive behaviors were not significantly influenced by game situation. Post-hoc analyses (Scheffé) revealed that coaches were more supportive and less punitive when their teams were winning or tied, rather than losing

Figure 1. Mean Percentage of Total Behaviors across Game Situation.



The modest effect sizes for Game Situation suggested considerable variability in behavioral profiles. Examination of individual coaching profiles revealed different, yet stable, behavioral signatures, supporting Hypothesis 4.

Figure 2. Mean Percentage of Behaviors across Game Situation for Coach A.

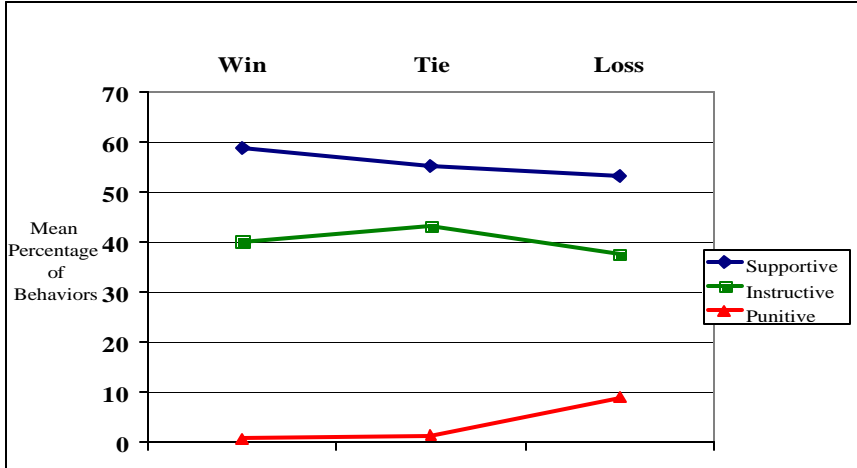
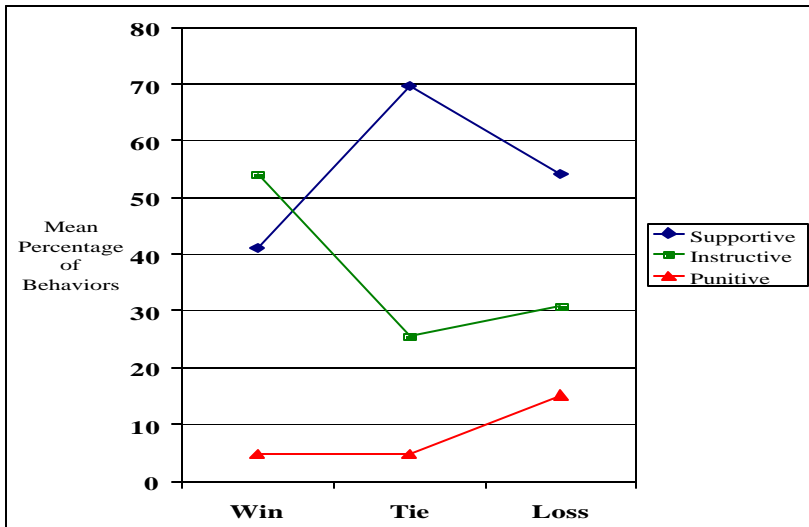


Figure 3. Mean Percentage of Behaviors across Game Situation for Coach B.



Coach A practiced less supportive and punitive behaviors when losing compared to winning. Meanwhile, Coach B showed significantly more supportive and less punitive reactions in similar game situations.

Stability coefficients, .89 for Coach A and .75 for Coach B, reflect the cross situational correlations across games.

In summary, main effects were observed for game situation versus supportive and punitive behaviors, but not for instructional behaviors. Individual coaching patterns remained consistent across games.

Discussion

The results support all four hypotheses. As predicted, situational factors influenced coaching behaviors. Whether or not a coach is winning, losing, or tied can affect their supportive or punitive interactions with players.

While there are group level differences between cross-situational stability of behaviors, even bigger differences were observed between individual coaches. Consistent with previous research (Mischel & Shoda, 1995), coaches exhibited distinctive and stable patterns of behaviors across situations. These results further demonstrate how group means can mask consistent individual differences. For example, Coach A continually became less supportive and more punitive when their team was losing versus winning while Coach B actually became more supportive and more punitive during similar situations. These consistent differences support the need to examine individual interactions instead of attributing differences to error. Behavioral coding systems like the CBAS have made way for researchers to examine individual interactions in a methodical and scientific manner.

There are many practical implications for these findings. First, use of the CBAS can help coaches become aware of their coaching techniques in different game situations. Making coaches more conscious of their behaviors is the first step in increasing the quality and effectiveness of their coaching styles. If they become more aware of how situations can lead their behaviors, coaches can try to alter their behaviors during different game statuses. For example, if a coach knew that they tended to become less supportive when their team was losing, they may try to increase their level of support during those times. Overall, coaches may try to increase supportive and reduce punitive behaviors, which could increase self-confidence and esteem in youth athletes.

It is important to recognize the limitations of this study. These findings may be limited to the type of sport played and the amount of competition/stress involved with that activity. The age of the participants must also be considered. Winning and losing may be viewed as more important as the age of the players increases, which could

influence the coaches' investment in game status. Cultural factors, such as amount of competition in sports and attitudes about winning, may also vary.

As this is one of the first studies examining individual coaching behaviors across game status, further research in this area is necessary. It is hoped that the insight into the behaviors of youth coaches will provide a foundation for the development of educational programs for coaches. These programs will help coaches become aware of their styles and show them how to exert more positive behaviors across situations. In turn, this will increase the likelihood that children will have a positive experience in sports.

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Acknowledgments

Faculty Mentors: Sean Cumming, Ph.D.; Ron Smith, Ph.D.; Frank Smoll, Ph.D.

I would like to take this opportunity to thank the Ronald E. McNair program and staff for giving me the opportunity to complete a research project during my undergraduate career. It has been an invaluable supplement to my educational experience and the program in itself has guided me through the very scary process of considering graduate school.

I would also like to send a very special thanks to my mentors, Dr. Sean Cumming, Dr. Ron Smith, Dr. Frank Smoll. Your patience has guided me through this entire learning process and I thank you for sharing your knowledge.

My experience as an undergraduate at the University of Washington was immensely enhanced by my participation in the Ronald E. McNair program. I am happy to announce that I have been accepted and am currently attending the University of Washington's Master of Social Work program. Thanks to everyone who made this possible!

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Lessons from Nature in the Design of Novel Materials

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Abstract

*Composites are widely used in industry for a vast number of applications. Interests to strengthen the chemical, optical, structural, and mechanical aspects of composites has led scientists and engineers to study biological composites and the mechanisms that have allowed them to evolve for over millions of years. The spicules that construct the cylindrical framework of the *Euplectella aspergillum* are of particular interest because they convey a matrix of organic and inorganic components that work together to toughen the overall structure of the sea sponge. By utilizing scanning electron microscopy (SEM) we were able to uncover the structural configuration of the silicon-based spicules forming the skeleton. The concentric rings surrounding the central core of the spicules revealed a lamellar layer whose thickness is $< 1 \text{ }\mu\text{m}$ and provides the structure with an effective “crack-arresting” mechanism. The “crack-arresting” mechanism is similar to that of composite materials containing a combination of two or more organic or inorganic components. The reinforcement material in the *Euplectella a.* can be thought of the silicon oxide (SiO_2) layers, while the matrix as the organic filament (silica proteins or “silicatein”). This study attempted to examine the chemical, structural, and mechanical properties of the *Euplectella a.**

Introduction

Silicon is the second most abundant element in the Earth's crust¹ and is the primary reason it is normally found in a number of biological systems, such as plants, animals, and microbial systems. Unlike human processing of siloxane-based materials, which require high temperatures, high pressures or the use of caustic chemicals, natural systems produce the simplest form of siloxane (SiO_2)_p under mild physiological conditions – producing over a gigaton of silica per year.² Nature has perfected processing techniques of silica by producing a diverse number of shells, spines, fibers and granules in many protests, diatoms, sponges, molluscs and higher plants.³ These biologically produced silicas exhibit a genetically controlled precision nanoscale architecture that, in many cases, exceeds the capabilities of present-day human engineering.² The ability to control the structuring of these systems requires nanoscale precision. In marine sponges, the mechanism used to control silica and oxygen synthesis is believed to be polymerization – a process that

converts monomer units into a long chained polymer structures. Protein filaments and their constituents subunits compromising the axial cores of silica spicules in a marine sponge chemically and spatially direct the polymerization of silica and silicone polymer networks form the corresponding alkoxide substrates *in vitro*, under conditions in which such syntheses otherwise require either an acid or base catalyst, Morse et al.⁴

Marine sponges are multicellular animals lacking reproductive, nervous, muscular, endocrine, circulatory, digestive, excretory, and respiratory systems, and with the exception of epithelial cells they lack anatomically discrete tissues.⁵ In spite of lacking an intraorganismal transport system, these sea creatures have the capacity to produce large quantities of minerals such as, aragonite, calcite, and silica. They are an aquatic set of phylum animals under the Porifera family, which is a relatively small family consisting primarily of 9,000 species.

Figure 1. Porifera phylum sponge classification.

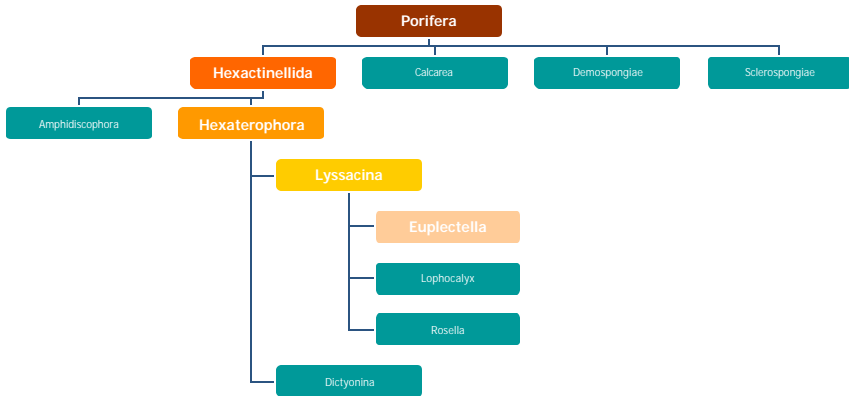
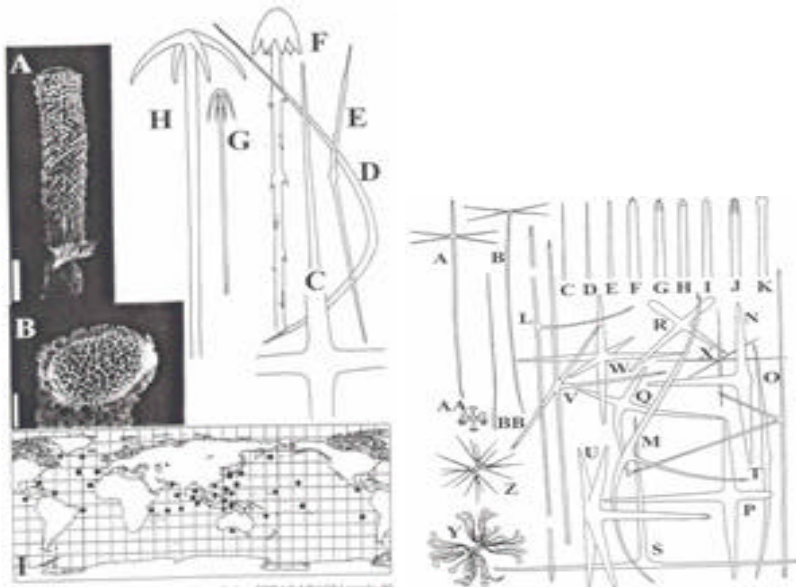


Figure 1 displays the Porifera family characterized by cell groups. Sponges are classified by either their organic substance called spongin or by their calcareous or siliceous spicules, whose outer structure resembles that of a fine hair strand.

Among the different sponges found, the Hexactinellida (glass sponges) class is of special interest. A hard skeleton composed of spicules supports these glass sponges. Spicules are needles of hard material shaped like spikes or stars, typically composed of calcium

carbonate or silicon dioxide in the form of spicules and/or collagen fibers.³ However, there is sponges that contain no skeleton at all. One unique characteristic that distinguishes the spicules of the Hexactinellida class are the siliceous and calcitic-based spicules, which are normally found in cold and warm water environments, respectively. A specific type of glass sponge containing siliceous spicules is the *Euplectella aspergillum*, commonly known as the Venus Flower Basket. The *Euplectella a.* sponge is found in the oceans at depths of about 23,000 feet (7,000 meters), but it is predominately located at a depth of 1500 feet (500 meters) from the ocean surface. Figure 2 displays the most common locations where the *Euplectella a.* has been found.

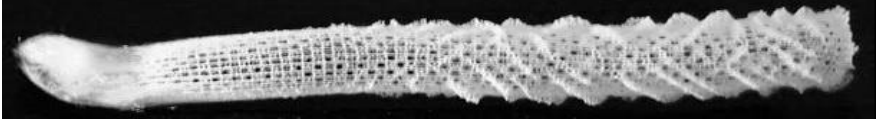
Figure 2. *Euplectella aspergillum* distribution locations and skeletal spicules.⁶



The *Euplectella a.* sponges' glassy structure is a result of a network of "six-rayed" spicules composed of silica, whose enclosed cylindrical body grows up to 30 cm in length. At the base of the skeleton is a tuft of fine fibers that extend outward in the form of an "inverted crown" that typically ranges from 50 to 175 mm in length with a thickness similar to that of human hair. The architectural structures of these species seem to be designed to withstand the slow moving currents found over the ocean beds, and attendant bending and twisting forces. A unique characteristic pertaining to this specific sponge is its structural

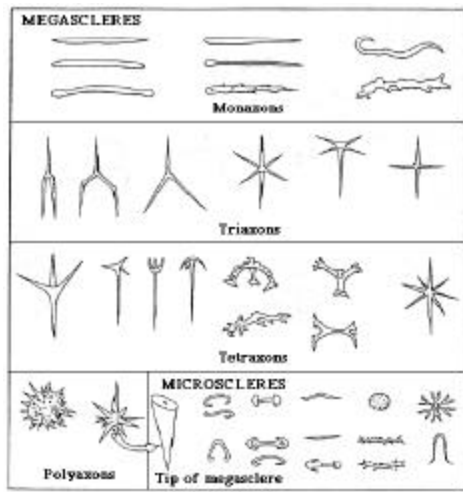
organization or weave. Figure 3 shows the weave of a typical *Euplectella a.* sponge.

Figure 3. Cylindrical framework of the *Euplectella aspergillum*.



The large spicules found in the skeleton are referred to as megascleres and the small spicules as microscleres. The Hexactinellida family is composed both of megascleres and microscleres. The most commonly found symmetries of spicules consist of monaxons, triaxons, tetraxons, and polyaxons. Sponges with siliceous spicules are primarily composed of triaxons. Triaxons form the skeleton of the sponge and often will fuse to form a net or box-like pattern.³ Even though it is not possible to state the actual size limits distinguishing the megascleres from the microscleres, the primary identification characteristics used is based on their architecture. Figure 4 gives the different spicular structure of the megascleres and microscleres.

Figure 4. Nomenclature of megascleres and microscleres spicules.³



In recent years, scientists and engineers, as well as people in the medical and pharmaceutical industries, have become extremely interested in studying the structural elements that have enabled these natural sea creatures to evolve for millions of years. The *Euplectella*

aspergillum sponge of particular interest because of the structural and mechanical properties incorporated into its very lightweight, yet stiff, skeleton. The purpose of this research is to analyze the elements responsible for conveying the attractive properties these natural sea creatures enclose by studying the structural configuration of this intricate system and characterizing its composition and fine structure.

Experimental Procedures

In attempt to evaluate the structural and mechanical aspects of the *Euplectella a.* the following analytical methods were carried out to look at the skeleton and tuft of the sponge in greater detail: Scanning Electron (SEM), X-Ray Diffraction (XRD), Fourier Transform Infrared spectroscopy (FTIR), and pressurization testing.

For this study the spicules of the *Euplectella a.* were collected by shell collectors from the Philippines, and treated with bleach for cleansing. The spicules were removed from the tuft (anchorage) of the cylindrical framework with tweezers. No chemical treatment was performed on the spicules after being received to avoid further disturbance in the chemical bonds and/or organic filament.

SEM Preparation

The morphology of the spicules was analyzed using a JSM 5200 SEM. Preparing the samples for SEM did not require much work, since no chemical treatment was recommended for viewing. In preparation for SEM analysis, the samples were mounted and plated with a conductive film. SEM allowed for surface analysis of the spicule and in examining the structural orientation at the joints.

Diffraction Preparation

Spicule preparation for XRD was minimal. The diffraction experiments were carried out using a Philips 1820 XRD using copper (K_{α}) wavelength of 1.54 Å. The x-ray target area is approximately 10 mm square, located 7 mm away from the end of the sample support, and must be centered on the theta shaft. The normal operating parameters for the APD program were:

- Working voltage = 40 kV
- Working Amperage = 20 mA
- Scan is continuous
- Step size = 0.02 (2θ)
- Time per step = 1 sec
- Scan speed = 0.02 (2θ /sec)

A sample taken from the top section of the *Euplectella a.* cylindrical framework was scanned on a Rigaku 12.5 kW rotating anode x-ray Diffraction system. A working voltage and amperage of 50 kV and

150 mV was used, respectively. The step size was 0.1 (20). Samples used in this experiment were prepared by placing them in a vacuum chamber for three days, allowing the moisture content to be absorbed, and ground using a mortar and pestle into a fine powder. A similar procedure was followed for the top and mid-section of the cylindrical framework to be analyzed using FTIR.

FTIR Preparation

FTIR was used to identify the organic molecules present and determine the purity and structure of the compounds in the spicules. This chemical analytical technique measured the infrared intensity versus the wavelength of light. Moreover, it detected the vibration characteristics of the chemical functional groups in the specimen. The samples tested in this experiment were in the condition received—a second set of spicules were immersed in seawater from the Puget Sound for approximately one week. The spicules were then ground in with a mortar and pestle until the fragments were of appropriate size. After grinding the spicules into a fine powder five milligrams was collected and mixed with 150 mg of potassium bromide (KBr). After mixing the powder it was pressed using a Craver hydraulic presser into a pellet. A force of 1500 pounds was added to the powder for one minute to allow the pellet to form. The trace was preformed using polarized Fourier Transformed Infrared spectra of 200 scans at 4 cm^{-1} resolution on a Nicolet 5DX spectrometer equipped with a DTGS detector. The spectrum was analyzed and displayed using standard Nicolet and Microcal Origin software.

Mechanical Testing Preparation

Lastly, pressurization measurements were performed using a Hook pressure gage. The top section of the skeleton was removed and the strength examined by applying a continuous pressure. A balloon was inserted into the inner-body of the *Euplectella a.* framework which applied the pressure. The objective of this experiment was to analyze the weakest parts of the skeleton. Debris remaining at the end of the test was collected for SEM examination. The figure below displays a picture of the how the pressurization test was conducted.

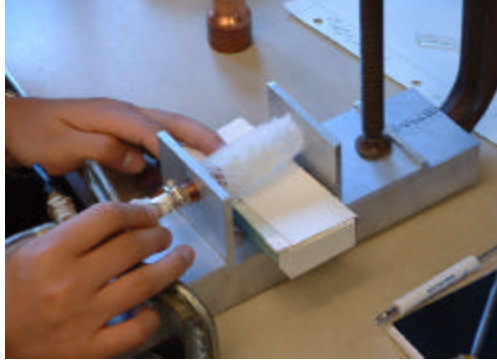
Results and Discussion

Scanning Electron Microscopy

Analysis on the morphology of the spicule cross-section by SEM revealed the presence of a concentric ring arrangement. Figure 6 shows the distinct layers present in the spicule. The diameter of the spicule is difficult to calculate since the spicule and the fracture is at an angle. Results obtained from Aizenberg *et al* at Lucent Technologies reveals

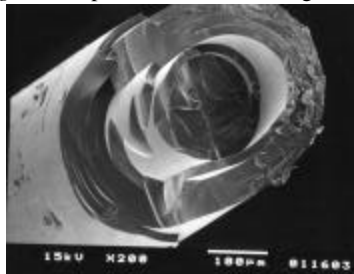
three distinct regions along the spicule cross-section. The spicules revealed a characteristic layered architecture with three distinct regions: $\sim 0.5\text{-}\mu\text{m}$ -wide organic axial filament (OF) running through a solid,

Figure 5. Pressurization test experimental set-up.



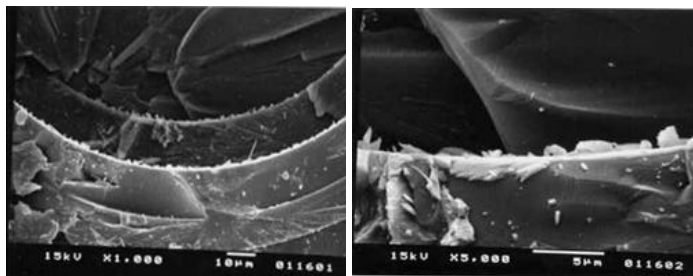
smooth, 15- to 25- μm -wide central cylinder (CC), which is embedded in a striated shell (SS) composed of a series of equally spaced, 08- to 1.0- μm -wide layers.⁷

Figure 6. Spicule structural configuration.



However, further analysis of the spicule disclosed a lamellar layer in between the concentric rings of thickness $< 1\ \mu\text{m}$. Figure 7 shows two magnified schematics of the lamellar layers.

Figure 7. Magnified view of interface surrounding concentric rings.

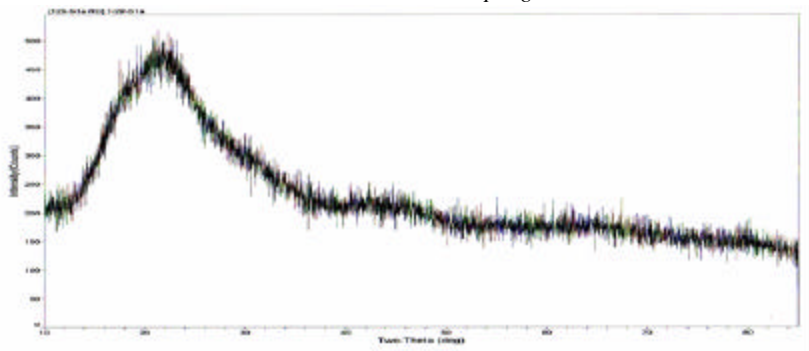


The layer around the silicon oxide concentric rings has not been identified. However, it could possibly be composed of a silica protein or silicatein, as referred to by Morse *et al.*

Fiber Diffraction Measurements

The diffraction patterns from a bundled set of spicules revealed the internal structure of a specimen. Two spicules were tested, that of the *Euplectella a.* and the other of an unknown Hexactinellida. The only difference between the two spicules was the diameter. The *Euplectella a.* had a diameter of 50 μm , while other spicule had a diameter of 75 μm . The large spicule had a sharp intensity maxima appeared a wavelength of $\sim 22^\circ$. Less intense peaks appeared at $\sim 44^\circ$. Figure 8 shows the pattern of the large spicule.

Figure 8. Diffraction pattern of large spicule pertaining to an unknown Hexactinellid sponge.



The maxima peak of the large spicule appeared at the wavelength were SiO_2 would normally be found. Figure 9 shows the peak of a perfect crystal structure of SiO_2 below the diffraction pattern. The other peak could not be identified because several other possibilities existed and without knowing the exact chemical composition of the specimen, the trace could not be accurately identified. For instance, in the *Euplectella a.* diffraction trace the maxima occurred at a wavelength $< 22^\circ$, which

also corresponds to sodium succinate among other compounds. Similar to the large spicule a minor peak was found at $\sim 44^\circ$. Therefore, the diffraction trace of the spicules remained inconclusive. However, it was determined that the trace was showed an amorphous crystal structure similar to the scan of silica glass (S-glass) shown below.

Figure 9. Large spicule with peak identification.

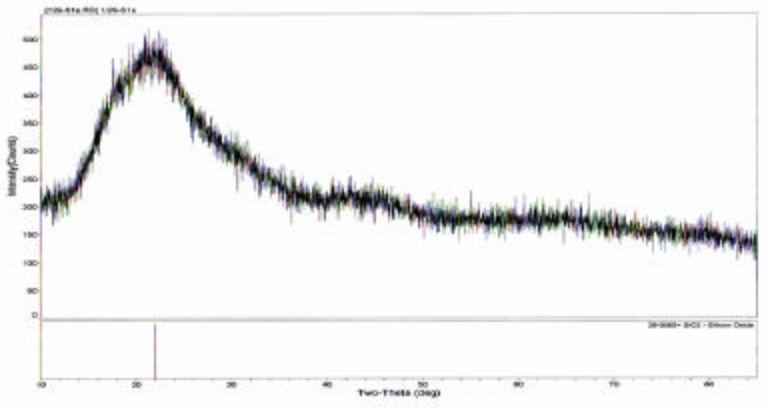


Figure 10. Diffraction pattern of the *Euplectella a. spicule*.

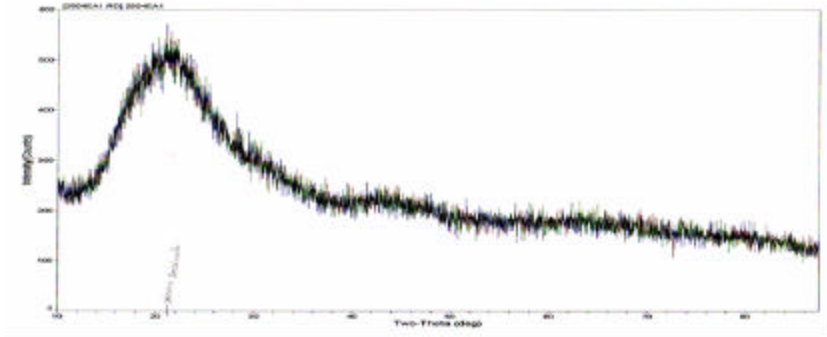
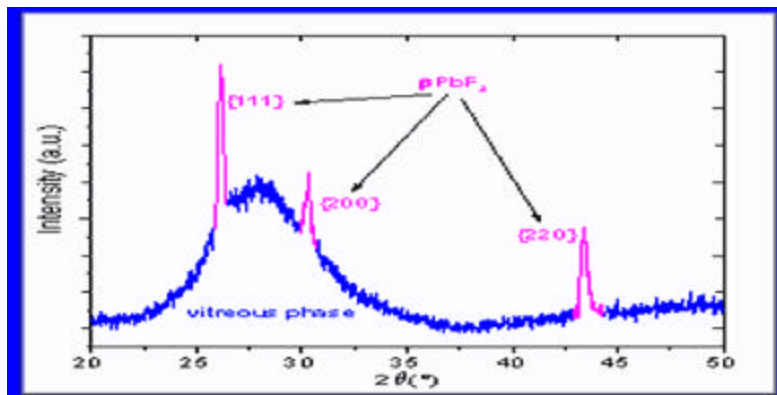


Figure 11. Structural characterization of rare Earth doped transparent glass-ceramic.⁸



The only noted difference was the location of the maxima peak, which appear at a wavelength of $\sim 28^\circ$. The minor peak again appeared at roughly $\sim 44^\circ$ as it did in the large spicule and that of the *Euplectella a.* The region underneath the maxima peak of the diffraction pattern is known as the vitreous phase.

Figure 12. Diffraction pattern of the *Euplectella a.* top section of cylindrical framework.

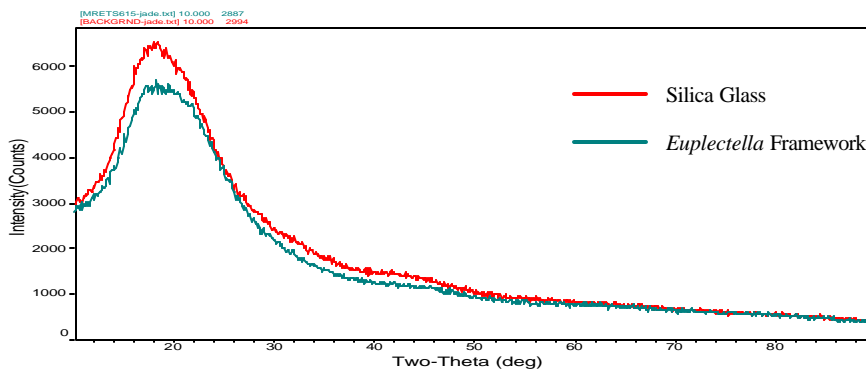


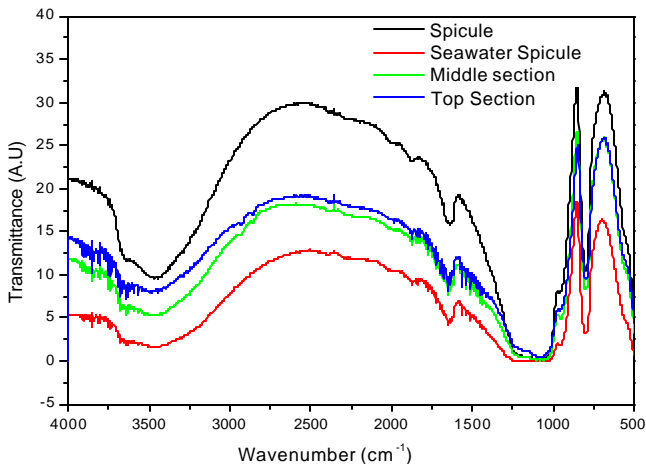
Figure 12 is the diffraction pattern taken from the top section of the sponges' cylindrical framework. The total length of the sponge measured 28 cm. The top section was taken from a 23-26 cm section—measured from the bottom of the sponge. As predicted, no change in the diffraction pattern was detected along the upper section of the cylindrical framework or at least none that the instrument used was able to detect. As illustrated by the figure both the silica glass template used for the experiment and the framework's diffraction pattern were scanned. As

detected from the previous scans the secondary peak observed at $\sim 44^\circ$ appears to be, in part, a major contribution of the silica glass alone.

Spectroscopic Analysis

Performing Fourier Transformation Infrared (FTIR) spectroscopy allowed the identification of the chemical compounds present in the spicules. Infrared light is categorized in the region of high intensity between $4 \sim 400 \text{ cm}^{-1}$, mid intensity in the $500 \sim 4,000 \text{ cm}^{-1}$, and near infrared region from $4,000 \sim 14,000 \text{ cm}^{-1}$. When the infrared light comes into contact with the specimen's surface the chemical bonds stretch, contract, and bend. As a result, the chemical functional groups present will absorb the infrared radiation at different wavenumbers regardless of the rest of the molecule structure. For instance, the carbonyl group ($\text{C}=\text{O}$) appears at around 1700 cm^{-1} in a wide range of molecules. Therefore, the band wavenumber position can be used to correlate the functional groups present in a sample with their corresponding chemical structure. The position where the functional groups adsorb are independent of temperature, pressure, sampling, or change in molecule structure in other parts of the molecules – making it easier to monitor the functional groups by simply using the infrared bands or wavenumbers. The spectra for the *Euplectella a.* spicules were examined using FTIR. One set of spicules was tested in its dried condition, while the other was immersed in seawater for one week. The spectrum obtained for both sets of conditions are shown below.

Figure 12. FTIR analysis for wet and dry spicules.



The results indicate that at a wavenumber of 3500 cm^{-1} water and the hydroxyl (OH) group were present. The carbonyl (C=O) group appeared at 1640 and a metal oxide (i.e. silica oxide) around 460 , 806 , and 978 cm^{-1} . These results are in parallel with what is found in the literature because as mentioned earlier the C=O group is found at 1700 cm^{-1} , water at 3500 cm^{-1} , and metal oxides at 460 , 800 , and 1100 cm^{-1} . There is speculation that other materials/functional groups may be present because of the broad peaks.

Another set of samples taken from the top and mid-section of the cylindrical framework. As indicated earlier the top section was taken from 23-26 cm from a 28 cm long skeleton, and the mid-section from the 10.5-14 cm length. The spectra for the top and mid-section contained all the valleys corresponding to the spicules located at the bottom of the cylindrical framework. However, two small peaks in the top and mid-section of the framework were observed at $\sim 2700\text{ cm}^{-1}$ and $\sim 2800\text{ cm}^{-1}$, which were not seen in the individual spicules located at the bottom of the sponge. To reveal the groups present at these specific wavenumbers an FTIR book must be referenced, since the functional groups are not common.

Mechanical Testing Analysis

Debris collected from the pressurization test revealed that the cylindrical framework of the *Euplectella a.* is weakest at the joints. The figure below shows the arrangement of the *Euplectella a.*, as well as the joining spicules.

The following observations were reported:

- Cracking began at an applied pressure > 1.5 psi during first trial.
- Cracking was continuous beyond 4 psi on the second trial.
- Highest pressure achieved was 8.75 psi without successfully breaking or damaging the cylindrical framework (i.e. it remained intact).

The debris collected was viewed under the SEM the pictures obtained were collected after one week of testing. Referring back to Figure 4, most of the debris collected appeared to triaxons—six-rayed star-shaped spicules, which appear to be coming from the joints of the skeleton.

Figures 14 and 15 are a set of pictures from debris collected right after the pressurization tests after the seventh trial.

Figure 13. Spicule arrangement of the *Euplectella a.*³

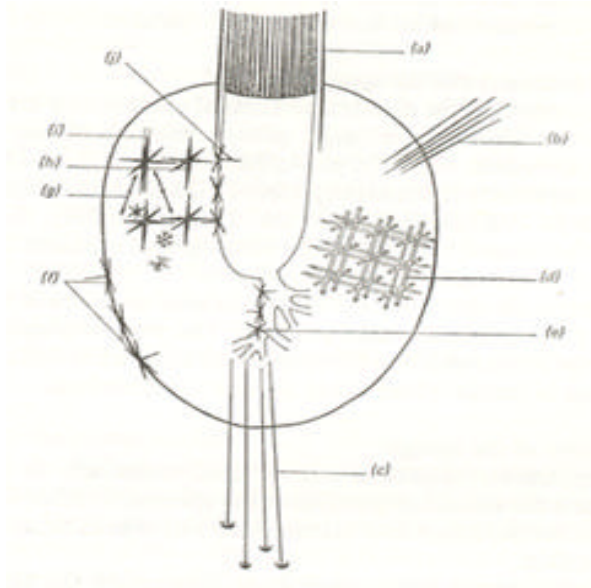


Figure 14. Debris collected from first six pressurization tests after one week.

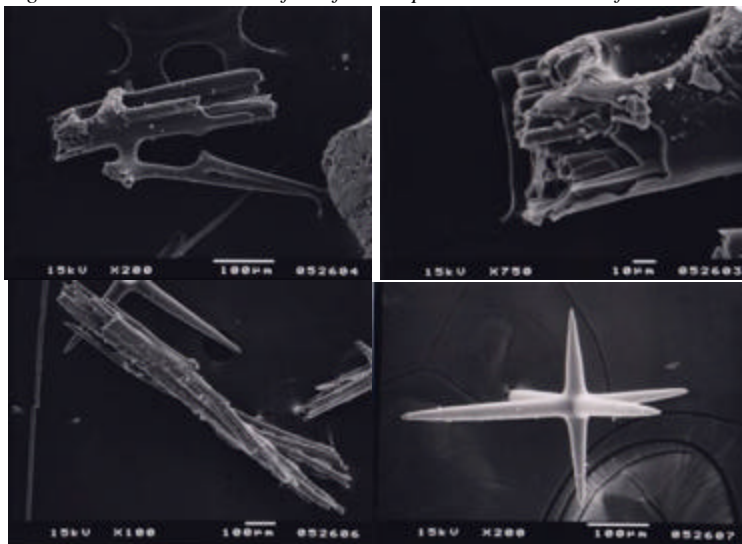
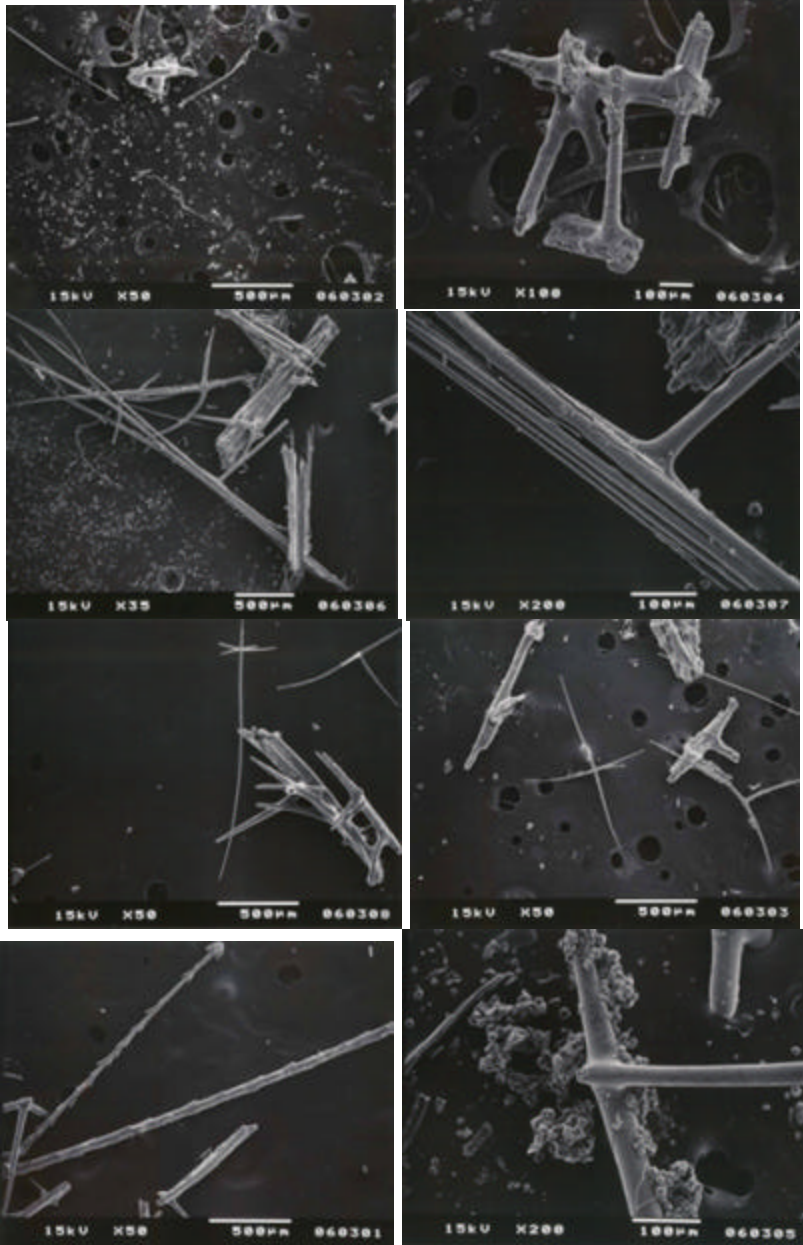


Figure 15. Debris collected from the seventh pressurization tests.



As seen from Figure's 14 and 15 most of the debris came from the joints depicted in Figure 13. The debris collected also shows that as you move up the cylindrical framework of the sponge they fuse into bundles of

individual spicules connected by means of an external layer. In other debris the spicules appear to fuse together. According to Bergquists, this occurs as the sponge matures in age.

Conclusions and Recommendations

In conclusion, SEM analysis allowed the identification of the structural configuration of the spicules. XRD showed us that like glass the crystal structure of the *Euplectella a.* was amorphous, while FTIR gave us the functional groups present within the spicule matrix. To further identify the exact composition of the organic filament embedded within the spicules more analytic tests with greater resolution or identification must be used. Even though the results presented did not have many conclusive results, the preliminary results obtained gave rise to a number of possibilities for future work:

- Devise a method to extract the very thin silicatein component from the hydrated silica component of the composite fiber, without damage or other alteration to either component.
- Develop a way to examine the anchoring of the silicatein to the hydrated silica component of the spicules in the Venus Flower Basket, or in other species.
- Study methods whereby the thin silicatein layer can be identified, such as electrophoresis.
- Develop the best way to prepare the spicule layers for examination in the SEM and AFM.
- Identify the mechanism(s) responsible for controlling self-repair.
- Analyze spicules using a more sophisticated XRD instrument, such as Small Angle Neutron Scattering (SANS) or Small Angle X-ray Scattering (SAXS).

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Acknowledgments

Faculty Mentor: George Mayer, Ph.D.

I would like to personally thank all those who contributed to my research project by helping me with the experimental set-up and in interpreting the results. Professor George Mayer was extremely helpful as my research advisor by recommending books and leading me in the right direction during my project. Thomas Murray and Robert Smith contributed their technical expertise and assistance. Hanson Fong and Thomas Murray helped with sample preparation and examination for the AFM and SEM analysis. Narayan Bhattarai helped with the FTIR analysis and in interpreting the results. Professor Kannan Krishnan and Marcela Gonzales for helping me operate and use their XRD. Ken Tran, my co-investigator during the research. I would also like to thank Rajendra Bordia and the University of Washington for allowing this type of work to be conducted at the department of Materials Science and Engineering and for providing the necessary equipment and funding. Last, but not least, the Ronald E. McNair program for all their support throughout the academic year.

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My research interests include studying natural and synthetic biocomposite materials useful for medical and related applications. I intend on pursuing a Ph.D. in Materials Science and Engineering.

Public vs. Private Schools: Addressing the Issue of Academic Disparities in the Context of College Readiness

Derek White

“The importance of caring/not caring in the present study also reflects the emphasis accorded to this factor by both student and teachers: explanations for the negative quality of life and schooling...often involved teachers and students each charging that the other ‘did not care.’...Students clearly state...school does not sufficiently provide relations premised on authentic caring. Differences in schooling orientations are linked to differences in the level of social capital that students possess in the context of their friendship networks.”

-Angela Valenzuela Subtractive Schooling (1999).

“The act of exchange is a way of building and sustaining relationships.”

-Roger Soder Developing Democratic Character In The Young(2001)

Introduction

Being a product of public school, I had the opportunity to see outside of the public school box. I visited a private institution in Seattle named Lakeside school. I observed in a couple of classes on more than one occasion. As I walked onto Lakeside’s campus I thought it was a school for prodigies. Psychologically this is a grooming method. Visually and mentally students are conditioned to think every day “I am going to campus” instead of “I am going to school” because the word “campus” is more so associated with college than high school. Aside from the extravagant campus grounds of Lakeside school, I was able to sit in on a couple of lectures on more than one occasion. The classes themselves are of moderate size but the student numbers are small which is better for more student-teacher relationships to develop. At Rainier Beach the classes are, on average, upper twenties/low thirties. With this number of students it is hard to develop any student teacher relationships. Further, Lakeside school’s curriculum is gauged toward academic success, which of course the students are well aware. While visiting this school there were students there would know it was a given that they would attend the local university and succeed, as opposed to Rainier Beach where some students don’t even know where the local college is. The achievement level between these two schools is very different. There

has been research done to improve the situation but that research has been ineffective in the quest for academic success. I think that where those scholars failed, I will succeed. I believe this because I am a product of the institution of unequal achievement. I was and still am able to see outside of the box. And from my own personal experience I think that one major issue that needs to be addressed is the nurturing of student-teacher relationships.

What these experiences reveal is the discrepancy between public and private schools. They also reveal that the public school academia has failed me as a student because the interest level was low. Further, that private school has a lot more to offer me than public school does. Private school academia offers social mobility, and the students are conditioned for higher education as opposed to public school. Further higher education is exclusionary to those who are not prepared academically. But solving the problem with public schools should not be merely having them imitate private school's curriculum, it is to reevaluate the environment public schools, specifically teachers, place students in. Teachers need to do this so that the students are able to achieve academic success. They should do this not by merely imitating private schools but by imitating the high achievement level curriculum and continuously putting it into practice. In order to execute high achievement level, public schools have to examine three key issues, and most importantly understand and practice the fourth. This research examines what factors contribute to the academic disparities between public and private school students and proposes three areas of focus for improving the academic achievement levels of public school students.

I argue that if these three issues are examined they will be effective in changing the face of education for the good. If they are not examined and implemented teachers, students and education suffers. Education as it stands needs to change because it provides social mobility. If students do not obtain the proper education they will be excluded from mobility. The environment of the student is the tree of education in which the demographic, curriculum and the caring of the teacher stem from. The environment needs to be reassessed because it is the main reason there are discrepancies between public and private school achievement. By analyzing and providing evidence to support my claim I will first explore and examine how education prevents certain individuals from academic success. I also will examine the environment, what the environment encompasses and how it plays an intricate role in achievement, what types of curriculum will work, and the student teacher relationships; who cares enough. What this will do is further identify issues that need to be addressed in the field of education.

Environment

I chose this specific area of education because I believe it is an important role in the heart of schooling. Many may agree when I say that if the environment does not help the students the education process will not help the teacher. And many teachers struggle with this idea because they do not weigh curriculum as heavy as others like I do. Environment entails various things such as the student's surroundings within the schools, curriculum, which is included, and what resources are available. To some individuals environment does not go beyond the school or even the class. The classroom is only a setting that provides the student with structure. Curriculum should not be associated with where it is being administered but should be associated by whom it is administered to. My plan is not to alter or rearrange the environment. My plan is to change the environment, tear it down and build a new structure. When doing so we must also consider who is accounted for and will benefit from this change.

Part of the reason for the achievement gap is the environment in which the student is placed. Another reason for the gap is the parties' involved only care to a certain extent and they feel that the rest is up to the other. Upon searching for ways to come up with a solution to the academic problem, I found data in a text by Angela Valenzuela called *Subtractive Schooling*. In her opinion she argues that the research done by other scholars about the attributes/attitudes of immigrants and the achievement decline because of no one cares enough. And as a result of no one caring enough this brings in other factors that affect the achievement of students. I also found a text, Developing Democratic Character in the Young, by Roger Soder that can complement Valenzuela's arguments. Soder suggests twelve conditions for a good political regime and in the context of education I believe that they need close attention. Although Soder suggests twelve conditions which are; trust, exchange, social capital, respect for equal justice under law, respect for civil discourse, recognition of the need for e pluribus unum, free and open inquiry, knowledge of rights, freedom, recognition of tension between freedom and order, recognition of the difference between a persuaded audience and a thoughtful public, and ecological understanding I believe that the first three trust, exchange and social capital are a way in which students and teachers can develop an academic relationship that will benefit them both. Valenzuela's primary evidence of the gap is based on Juan Seguin High School in Houston Texas. As stated before I think that the most important elements in schooling are: the curriculum, the changing demographics, and the student/teacher relationships. Although there are other elements that are

important these three are the primary factors that allow students to achieve in a not-so-achievable environment. Achievement is just like a color chart where there are the primary and secondary colors. The three elements that I listed are the primary colors everything else is, for a lack of a better term, secondary. By using these elements I believe will allow students to surpass the today's standard. With the standard in mind, Valenzuela touches on different elements of the standard that forbid students to excel. Elements such as: hiring out-of-state teachers, the dropout rate, the counting of students by the U.S. Census, and the demographic changes. I have deduced from Valenzuela's evidence that these are some of the reasons for the discrepancy between public and private school institutions. Valenzuela states, "A district wide pattern of hiring out-of-state teachers also exacerbates social and cultural distance." (38) Although this maybe the case it still isn't the reason for the achievement gap. Sure there is a cultural issue where the relationship between the student and the teacher is not strong because of not being able to relate but this is just an excuse for the gap. In today's society we tend to label things and what we have done here is labeled this someone's fault. Pointing the finger does nothing but make matters worse because there is no solution offered and the student see this and think that it is all right to point the finger instead of taking responsibility. Soder talks about how in order to build and sustain relationships there has to be trust and an even exchange of it from both parties involved. The social and cultural distance is created by attitude. The attitude of the teacher has a lot to do with the distance between the student and teacher on a social level because the student expects the teacher to have a certain attitude while receiving their lesson. If the attitude is not encouraging then this becomes detrimental for the student and the teacher. On a cultural level, the attitude needs to support the overall objective of the school specifically open minded to all cultures. In this instance we have to call it what it is, it is not the out-of-state teacher theory. It *is* the relationship the teacher chooses to have with the student and vice versa.

I. Demographic

Again, Valenzuela points out an element she argues has to do with the achievement gap. Although she brings up a valid point about the effect dropouts have on the student body and its association to the achievement it still doesn't address the issues, why are these students dropping out? And who is responsible for them? Valenzuela states, The high dropout rate at Seguin has a profound effect on the composition of student body...any given year more than half of the school population is composed of freshman, or ninth-graders.

A full quarter of them are usually repeating the ninth grade for at least a second time...this suggests that the dropout problem is directly associated with low levels of achievement (42-3)

Although high school dropouts effect the student population, they do not effect the achievement. This is another account of pointing the finger when achievement is not right. Valenzuela's data indicates that "more than half of the school population is composed of ninth graders" and more importantly that of those ninth graders 25% of them are "repeating the ninth grade for at least a second time" There are a couple issues with this data. Thinking on a national level, if this data represented all of the public high schools in the country this would mean that about 65% of high school students were in the ninth grade. And of that 65%, 25% repeated the ninth grade at least twice. This means that there is a population of ninth graders who have repeated twice or more, which is troubling. This should not be. It is a reflection upon the entire school system. The other issue with this data is, what is the level of education there? How are the relationships between teacher and student? Who is caring? And why aren't the students passing? These are issues that need to be addressed. Finally it is quite obvious that this suggests the dropout problem is directly associated with achievement but only on the surface. If we dig deeper into the issue it is not directly associated with low achievement but directly associated with everything related to caring. If teachers or students care less than enough then as a result there will be students dropping-out. On the other hand, if there is caring then student become more motivated and a lot less privy to dropping-out as an option if they are discouraged. This motivation could come in the form of building and sustain this academic relationship. Trust is some thing that needs to be developed usually over time. But I can trust someone because they are trusted by someone that I trust. For example, if I had a student and they were not the best student as far as the grading scale but I knew from their effort and their character that they were indeed a good student and they tell me about a in-coming student that I should keep a look out for I trust that this in-coming student is a good student because my relationship with my current student. This trust does, for the most part, come over time which is based off of experience. Usually there has to be open and flexible exchange between both parties as well. This exchange is not of goods or products but of commitment. Exchange cannot and should not be rigid but be flexible. Sometimes we may not have fifty percent to give so we have to understand that it is not just about us but them as well. The idea of social capital comes into play here. Where trust and exchange co-mingle and thrive off of each other social capital is taking root. Social capital is the nurturing of the already

built relationship. So in the instant of discouragement it wouldn't matter if the student became discouraged because there would be support from the teacher in the form of encouragement and the student as well as the teacher would trust one another that each had the others best interest in mind.

A U.S. Census pole recorded in 1990 show that there was an undercount by not considering students living in this country at an average of ten years. This is important because students have to be accounted for and Valenzuela makes it a point to analyze the demographics of the student body, which is in connection with the curriculum and environment of the school. Valenzuela states, "...because of a U.S. Census undercount in 1990...they compromise 45 percent of the entire student body with varying lengths of residency and a median number of ten years living in the United States." (44) This study is tricky because in our society we are stuck in labeling and we do not want to be confined to labeling because it can harm students and they are not taking responsibility for what is important here, the reason the achievement level are low. The achievement levels are low not because of out-of-state teachers, dropout students, or the census undercount (although they are supplementing the primary elements). Again, it is the attitudes of both the student and the teacher. With that said, the census is a factor in determining what the student body is made up of. In this respect, when the academic curriculum changes the school system we will be able to determine who will benefit from this change. For example, at any school in the U.S. there is an exorbitant amount of West African immigrants whose children have been in the school system within the last ten years. Although these students are West African, they are considered African American because (1) they are African and (2) they were born in the U.S., which makes them U.S. citizens. The question is what category do these students fall under. In Valenzuela's data she points out that there is a difference in achievement as far as first-generation immigrants as opposed to U.S. born youth is something worth looking at. Valenzuela states, "...I designed this study to compare the schooling experiences of first-generation immigrants with those of U.S.-born youth..." (44) Immigrants have a different way learning within the confines of the schooling institution. They have to learn the primary language spoken, which is English and the culture that comes along with it. U.S. -born youth, from birth, learn the culture and even when school they do not have to learn double the education, meaning immigrants have to learn another type of education along with the one they already know. This is important because it allows us to see who benefits from the education. Education, at least acceptable education, is exclusionary. Those who do

not meet the standard or the achievement is low on account of learning a new system of education are excluded from high achievement or don't benefit from the education they receive. The three conditions that I have borrowed from Soder have not been limited to building relationships by agreeing with one another. These conditions recognize that everyone is not at the same academic level, that some students learn differently, and that it's okay that some students are on different levels of learning we will just have a more cooperative learning style of teaching so that not only the relationship is becoming stronger but also the teacher and student become more confident with and in each other. Valenzuela gently touches on achievement being a racial issue. She does this by mentioning the demographic of the student body at Seguin and more specifically the change in the general area surrounding this high school. Valenzuela states,

“There is no doubt that demographic changes reconfigured the East End as a whole at Seguin, in particular. Much as the community lost its white, middle-class affluence, the high school lost its academic luster. But demographics were not the only source of this downward spiral.” (44)

The interesting thing about this is that higher education or high achievement has attributed to economic white privilege. This privilege controls what direction education reaches. Even though this is specifically in this area it is something that re-occurs in the school system as a whole. Early in Seguin's academic history the achievement level was relatively high because of the sense of urgency in regards to the student's welfare that the teachers implemented and as a result the students responded by caring. Later in Seguin's academic history the achievement level gradually fell as the sense of urgency to produce high achievement did and as a result we have this problem, low achievement and no caring. The point that Valenzuela is making is that there is a loss of luster, urgency with respect to standard education, and a loss of caring. Because of this inconsistency in the educational system a problem emerges. The solution to this problem is relatively easy. Valenzuela suggests that this is one of many issues concerning the academic achievement in the schooling system. I propose that teachers as well as students need create an environment where caring is top priority. According to Valenzuela's data the achievement level went down as soon as the teachers stop caring and if the teachers do not care then the students will not either. The other side to this problem is that once the achievement level has gone down it eventually has to be raised. The issue at hand is, to what level is it going to be raised to? Since the standard is not benefiting all students and only benefiting select few, I

propose that the education needs to be deconstructed and then reconstructed so that all students will benefit from this change. Another element that will reinforce this need to reinvent education is the idea of caring. If students and teachers care about the welfare of the student than the achievement level will skyrocket.

II. Curriculum

In the previous segments of this paper there is an element that interconnects everything and that is the curriculum aspect of achievement. In the first segment I discuss the idea of the environment in education that the student is exposed to. It is also embedded in the curriculum of the classroom. In the second segment I discussed the demographic/population of the school, which is important because you have to know who is or will be benefiting from academic success. It is important to know the population of the school because you don't want to exclude anyone from academic success. In this segment I will discuss curriculum because it is the catalyst that drives the relationship of both the teacher and the student. This idea of curriculum driving the relationship is similar to the three conditions driving the relationship. Curriculum also is the outline that teachers refer to for guidance themselves the only difference is that the curriculum a teacher refers to is a direct reflection of the teacher. When the curriculum chosen does not work for either the teacher or student we have to analyze what went wrong. But the bottom line is that ultimately the teacher is responsible. Also, the teacher needs to make his or her curriculum interesting because if it isn't it may become monotonous. The student wants to be entertained as well as learn. The student will not be entertained if there is no kind of relationship or bond present. Soder discusses how this bond is necessary for sustaining the relationship between teachers and students. He states, "The act of exchange is a way of building and sustaining relationships."

The teacher should go the extra mile to see to it that his or her students are interested in the subject discussed.

III. Caring: Student /Teacher Relationship

The student-teacher relationship is the channel that enables education to work for both parties involved. This section of the paper will analyze the attitude of the teacher on all levels, from elementary to high school. I chose three individuals for this research because I have known each individual for an extended period of time. These individuals have at least been in the classroom for one year or more. Also they are all women. Being that the majority of teachers are women I felt that women

have more of an understanding for what goes on inside and outside the classroom.

To provide the context for this interview process, I asked questions that converse with my overall argument. I primarily look at works that point to the student-teacher relationships as means to find the solution to the problem of underachievement. To do this, I utilized books from the University Libraries, articles from local newspapers, the Eric research database, and specifically interviews to gather information that helped me reach my goal. These interviews enabled me to begin the first stages of a new form of education that all students will benefit from. This portion of the research consists of one to two hour interviews with teachers from different public and private schools institutions in Seattle. I will choose at least two teachers to conduct this research. These interviews will serve to provide information regarding the relationship between student and teacher and the environment the student is exposed to. These interviews are designed to uncover what teachers thought constituted a healthy learning environment for students; and, strategies that they had found to be useful and un-useful for influencing positive changes in student's academic achievement levels. The study participants were: Teachers, with at least 1yr of teaching experience, who worked in either public or private school.

In the interviews, all teachers were asked the same questions, even though some of the questions about the relationship between student and teacher may not apply to all students. The questions will provide a case study to put the student's environment in proper context. These questions are set by the following theme:

1. Environment

- A. Teachers

1. How would you rate yourself and other teachers, as far as helping students solve school-related or academic problems?
 2. Have you ever been exposed to a situation where a student's teacher has not listened to what they had to say? If so explain.
 3. Do students disrupt class? If so, how do you respond and if disciplined what do you consider fair discipline?

2. Demographics

- A. Teachers

1. How do you deal with different cultures in the classroom?
 2. How do you advocate for diversity?

3. Student-Teacher relationship

A. Teachers

1. Do you as a teacher give your students the moral support they need to do well in school?
2. Do you find students relying on you or other teachers for advice and guidance in making important school-related decisions?
3. Are you and other teachers sensitive to student's personal needs?
4. When students work hard on schoolwork, do you praise their effort?

The majority of these questions are primarily for trying to contextualize the environment, the demographic and the student-teacher relationship. Often, teachers will say how they go out of their way to keep a healthy environment and it is the students who do not want to learn, not taking into account that there are students who do want to learn, and yet the problem still persists. The three themes listed are not arranged at levels of importance nor are they the only themes that can be articulated, they are there based on the connection between each question and how they become important when placed together. These questions will only ignite the flame that is to come. These questions help me dig deeper into why the student's environment is hurting the process of academic success.

In order for me to complete the task of identifying the problem and come up with possible solutions, again I had to rule out anything that didn't apply directly. Before, I stated that some data I came across touches on the cultural issues of not only out-of-state teachers but teachers in classrooms being predominantly white women. I took this in consideration and felt that I would use minority teachers for my research. I used an African American woman by the name of Tamikya St. Clair. Mrs. St. Clair has been a teacher for at least one year at an elementary school by the name of African American Academy. This school's population is predominantly African American and the majority of the children have (low achievement levels) The second individual I chose to interview is Japanese American woman by the name of Jamie Asaka. Ms. Asaka has been teaching for at least six years mostly in predominantly African American schools. She has experienced a couple of different public school systems that reinforce the problem at hand, not caring enough. Ms. Asaka has taught in the Seattle Public School District for three years at the middle school level has commented on much she loves it. The third and final individual I chose to interview for this

research is Janine Williams-Dingus. Mrs. Williams-Dingus is a former high school teacher from Rochester, New York. Mrs. Williams has taught in a predominately African American high school for three years and remarks on how students aren't cared for enough. These interviews respond to the discouraging fact that African American students aren't cared enough for and these teachers with their different backgrounds to their experiences in education shows the continuous cycle placed upon student's low achievement levels by what each of them has to say about this problem. The problem isn't just with African American students it is within the minority culture we find the discrepancy in education with the dominant culture. From this data it is evident that (students with economic privilege are at an educational advantage). The problem with that is, although money is a factor it will not fill the achievement gap. To improve achievement someone has to care. In these three interviews, through teacher evaluations, my purpose was to get to the bottom of student-teacher relationships and what influence they have on the achievement levels of students; specifically the African American students. I asked all three teachers the same questions on separate occasions and their responses were as I anticipated, they coincided with the research I am doing regarding academic achievement. I asked all three, "Do you as a teacher give your students the moral support they need to do well in school?" They all had similar answers which was surprising being that they were from different levels of education; high, middle, and elementary school. Mrs. Dingus said:

I think that you can do those things if you know who the kids are and even the student that you don't teach, just try and have an encouraging word for them. I would do things like try and put motivating and inspiring quotes up on the board each day for the students. We would have lessons in school that related to character building.

Ms. Asaka said, "...I don't treat them like, I mean, they are people...moral support is a form of being supportive...um, to me it has nothing to do with the classroom, and it's just being there..." From the same question Mrs. St Clair said, "Definitely, for me teaching encompasses more...before you can meet that academic needs you have to meet the social and or emotional needs" The common factor between all three of these teachers is that they do more than the norm. This is what allows students to accomplish more because their teachers support them in more ways than one. It is going that extra distance to fulfill what is needed to help students to academic success.

I went on to ask them if they find students relying on them or other teachers for advice and guidance in making important school-

related decisions. And the most intriguing answer was from Mrs. St Clair. It was interesting because she noticed at an elementary level that there are different teaching capacities to instruct, help students on an academic level and on a social level. She states, "...it is difficult for me to answer as an elementary teacher because we are working on more than one of the students skills-social, emotional, academics, which are taught in partnership and not in isolation" The younger the student the more involved the teacher tends to be. This is a problem because teachers believe that once a student reaches a certain age that they can handle challenges on their own. This is not the case according to my research. In these interviews I noticed that there is a lack of support in all these schools. I went on to ask, are you and other teacher's sensitive to the student's personal needs? And Mrs. Dingus responded:

I had one student in the class named Melinda. She was 15 and already had about three kids. She was about 5'2", a short girl and I looked down at her feet, on the first day of school and she had on a pair of men's sneakers that were way to big for her, men's sneakers size 9 or 10. I say that because that started me on the process of thinking that I needed to shed my own notions and my own privileged educational stuff and really think about who these kids are. There were times when I had to give the kids money, rides home etc...yeah, it was against the rules but I was like "Hey, what do you do?"...I think it is about being momma too, being a listener. It's about knowing what resources are available in the community and in the school.

Support I think can be administered several ways, one being the personal needs of the students. Another is listening to their needs and respecting the relationship you build with your students. Mrs. Dingus continues, "A person once said, 'Having the ears to listen.' I think that that is what it's about. There are some teachers that don't care what was going on in the kid's lives." At this point I interjected to say that without listening to your students there tends to be a gap between both parties. The student does not think the teacher cares enough and as a result of this the teacher thinks that the student has given and will not care. For instance, Mrs. Dingus explains a situation surrounding a student who is involved in sports and the relationship between the student and teacher is grounded on the fact that he does play sports and the teacher is taking advantage of this relationship for his own personal gain. D.W. "Valenzuela says that there is a gap between students and teachers and students are perceptive to that."

Mrs. Dingus "Um Huh, they can smell it. Some teachers put on the front of being 'super teacher' but they really have their own political

agendas. You have people that would say they are for the kids but sabotaging them in a way were they weren't challenging them to be better or in a way where we are just using Pee Wee because he can run the ball and can you give him a D so that he can play in the game this Saturday That's not genuine care for the kids. That's about you are trying to rack up wins so you can become the athletic director.

The relationship between teacher and student is extremely important because it is the channel through which students are able to make crucial decisions throughout their academic careers. One important issue is that if teachers have an encouraging bond or relationship with their students the teachers would not allow the students to be exposed to the low achievement levels. Mrs. Dingus goes on to say:

...They had only a certain number of kids that were honors kids, even if you put them into regular classes they would have been mid level but relative to their peers at school they were advanced. Also I felt that the guidance counselors weren't doing a good job getting the word out about college these kids weren't taking all of the math that they needed to be taking they would have to take the courses in college, but they would have to pay for them.

This is not just on the high school level. This also happens on the elementary level as well. I asked Mrs. St. Clair, "Are you and other teachers sensitive to the student's personal needs?" And she replied:

I was in a teacher's room when a child was kept in from recess and the child was having a difficult time with reading. The supervising teacher made reference to that child only being at school because the parent didn't want to be bothered with the child...this was said in front of the child...so it is obvious that, depending upon the teacher, the support isn't always offered or some teachers lack the support that is needed.

In this interview, Mrs. St. Clair always emphasized that the children of this school were at an achievement level that no-one cared anymore. I remember she told me that there was a student who was much older than the children in his class but the teachers kept failing him. Instead of guiding him they left him for the next teacher to deal with. When I heard this I was awe-struck, in total disbelief.

I went on to ask the teachers individually if any of their children have a friendly trusting relationship with them. Mrs. Asaka noted, "...I'm not a policeman, I'm not a mother, I'm a resource. Mrs. St. Clair said:

Not a friendly, because I make a clear distinction between appropriate adult-child relationships but, the children in my class know that they are free to share their feelings or things that maybe

on their minds...Yes but as a part of that trust I let them know that if there are issues of abuse or negligence I have to by law disclose that information if it is harmful.

And Mrs. Dingus replied:

Teachers be in there talking about the kids “And so and so is dumb as wood” and you hear some very derogatory things and very early on I was like I need to surround myself with positive people or go on my own. I think there is strength in the community but you have those folks where...I think it’s about being proactive about your kids. If you think your kid has potential for a scholarship you guide your kids down that path. There were teachers that did not give a damn about the kids and didn’t want to be there and it was so evident.

I made a mental note of all of their statements and chose to analyze what each of them had to say. Mrs. Asaka, the middle school teacher, her comment was quite interesting because she acknowledges that there is a conflict of interest between being a parent and the child going to them for support. She also recognizes that the student will more than likely take advantage of a resource rather than a parent. And finally by using policeman, it adds emphasis to the fact that a lot of teachers think that they’re policing students. And it is clear by Mrs. Asaka’s testimony that it’s not the case in her classroom.

Mrs. St. Clair, the elementary school teacher, her response is a special case simply because as she states there is a fine line, that students need to know at such a young age, they shouldn’t cross. Mrs. Williams’s response brings up an outstanding point as well. If teachers have certain type of attitude toward their students outside of class, more than likely that same attitude will trickle inside the classroom. The fact that teacher can feel this way about students and they’re still teaching in this field is careless.

I continued my questioning and asked, “When students work hard on schoolwork, do you praise their effort?”

Mrs. Dingus: “Yes. If I know that a student is really trying...I would pass notes of encouragement and thanks.”

Mrs. St Clair: “I reward those who are on task and doing their work... these are the student who need extra incentive for completing their work.”

These questions were only a third of the question that I elicited from the entire interviewing process and still by analyzing these questions I am witness to a pattern. This pattern is the process of low academic achievement. From this I asked a follow-up question to all of the teachers. I asked, “Overall do students get along with teachers?”

Mrs. Dingus: “Some did, some didn’t. Students knew who cared about them and they gravitated toward the ones who cared.”

Ms. Asaka: “I think students want to get along with teachers...there is a power struggle like: male vs. female, student vs. teacher...the role of the teacher is to control the student...students come in resisting authority and also come in unheard...it’s the responsibility of the teacher to get along with the student.”

T.S.: “My primary concern is the education of my students whether or not we get along is secondary...There is an expectancy from both parties.”

The responses to my interview questions reinforce how important it is for teachers to keep a nurturing relationship with students. Students are perceptive to what kind of relationship is being built by teachers. It does not do anyone any good if this bond/relationship is being taken advantage of. As you see the teachers I chose to interview plainly advise doing more, as teachers, to nurture the bond between themselves and students. They also encourage moral support, which allow the bond created to become stronger.

Conclusion

In the Seattle Public School system specifically Rainier Beach High School, I have watched student’s achievement level spiral down because their relationships with the teachers were not what they should have been. During my sophomore year in high school I was given the chance to attend high school in another state and I did. Throughout the sophomore year I attended this “other” school I noticed a difference in the environment extremely fast. There was more support from teachers and other students as well. This “other” school was in fact a public institution. And from this I strove to improve my grades. So it is not merely about the difference in achievement level between public and private schools. It is about the environment a student is place in. At that point my grades gradually moved up from 1.7 to a 3.0 average and also my achievement level improved a great deal. After this “new found interest” in school I continued to study hard so that I would be able to get into college. I returned to Rainer Beach and found that my achievement level was higher than the level of my peers. As a result of this I only built relationships with teacher that I knew considered my best interest. I allowed the other teachers to believe that I did not care about my education because then, they would not discourage me from my ultimate goal. I even had one teacher approach me, even though I had never taken a class with her, and say “Derek, are you really going to graduate?” and my reply to her was, “yes...why?” and she said, “well, walking the halls

like you don't have a class...why aren't you in class?" and I replied, "well, why aren't you in class?" I think that it is important, as a student, to feel out teachers because you never know what the teacher's agendas are. Also I believe that is what a lot of students do anyway to get a feel for where the teacher is at and what their objective is. The significance of this encounter is that this teacher was worried about "lil ol' me" but she had a whole class of 30 some-odd students to attend to. Although her students were in class, she had time to sit and question me about my future plans and her students are back in her classroom; alone. These sorts of things kept coming up during the rest of my high school career and I learned to deal with them but I think that not all students are as fortunate as I was.

These sorts of things show how education, specifically achievement levels, prevents students to go-on to higher education or academic success. I divided this paper into segments that are crucial to look at in the higher achievement process. These segments are: Personal Experience, the Environment which encompasses the Demographic, Curriculum, and the Caring between students and teachers. What these segments analyze and comment on is; what the student is being exposed to as far as college preparation and student teacher relationships. And is this helping students to academic success or preparing them for college? Specifically, the environment can work for or against the student. The environment is the space where the student can be academically nurtured. My research shows that the student's environment is directly related to how well the student does in his academic career. The demographic is also directly related to academic achievement/success. Again, we must break down the student population in order to know who represents what group and who will benefit from academic change. It also relates to academic exclusion if the student is categorized with a group they do not belong in. Curriculum also is directly related to academic success because with curriculum teachers have to analyze what type of curriculum it is teachers are using and is it effective. My personal experience is a reflection of the discrepancy between public schools and private schools. My personal experience is also my investment in this research as well as in the field of teaching. If I were not able to see outside of the box I don't think I would have been able to express an interest in teaching. The Interviewing segment is about who cares enough to guide students to academic success. Some teachers think that teaching begins and ends inside the classroom. If this were true then the educational system would be in shambles. These teachers that think this way are what I call "stop-watch" teachers. As they begin class, they start the stop-watch and begin their "race". What I mean by "race" is when a

runner competes in a race they may give it their best shot but at some point they stop because the race ends. These athletes know ahead of time that the race will end; knowing that the race is temporary and their time will run out. I know that this concept attacks not only these teachers aforementioned but it also attacks the educational policies. I don't want anyone to miss the tree for the forest here; I want to get to the bottom of this issue by taking a look at the real issues behind academic disparities. These teachers don't see schooling as outside the classroom sphere. And what this does in effect is it subconsciously programs the students to believe, because of this non-supplemental support, that school and the work that comes along with it starts and stops in the classroom. This is where teachers should change their thinking. It also is an opportunity for teachers to reevaluate their methodology inside the classroom, things such as how much more could they care and is their relationships as "genuine" as they assume. These segments are more like instructions or steps to academic success—from the student, to be put into practice by the teacher. These things are not impossible to address. In fact, they are quite easy if the teacher remains consistent in paying attention to and improving the student's environment. I remember an old saying my mother and her peers used to say, "It takes a village to raise a child" and this research allowed me to realize that "it takes *more* from a teacher to guide a student."

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Acknowledgments

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