MESSAGE FROM PRESIDENT BOB KUSTRA

It is with real pleasure that I write to introduce this tenth volume of the McNair Scholars Research Journal. The papers contained in this volume represent a remarkable breadth of scholarship that encompasses some of the best of what Boise State University has to offer. The Scholars, their faculty mentors, the staff of the McNair Program, and all of us at Boise State are very proud of this work.

Congratulations to all of the 2014 McNair Scholars for your achievements over the past year. In particular, I want to acknowledge the hard work and accomplishments of the senior Scholars whose research is represented in the papers in this publication. McNair scholars work with faculty mentors who are committed to the rigors of scholarship—a working relationship that both students and faculty describe as unique and beneficial. I also want to recognize and thank all of the faculty mentors who have worked with our McNair Scholars. It is your patience, guidance, and encouragement that facilitates the transformation of these students into scholars.

The Ronald E. McNair Post-Baccalaureate Achievement Program honors the memory and achievement of the late Dr. Ronald E. McNair, a physicist and NASA astronaut. Its goal is to encourage undergraduates from underrepresented backgrounds to emulate the academic and professional accomplishments of Dr. McNair by facilitating their pursuit of doctoral degrees and academic careers in teaching and research. The McNair Scholars Research Journal is evidence that the McNair Program provides a valuable opportunity for these students to explore research on significant issues. The McNair Program also provides students access to nation-wide conferences and graduate schools where they can present their original projects and meet doctoral faculty. Completing its tenth year on our campus, the program’s formula for helping students gain access to graduate school programs has proven very successful for a vast majority of those who have participated since its inception.

The research presented here signals the arrival of a new group of rising scholars who will carry their talents, enthusiasm, and hard work ahead into graduate programs here and across the country. I hope that you will continue to aspire, achieve, and pursue your dreams.

Again, congratulations and best wishes.

Sincerely,

Bob Kustra
May 2014

We are very happy to publish our tenth issue of the Boise State McNair Scholars Research Journal. We believe it demonstrates excellent undergraduate research and shows what can be produced when students are provided meaningful support through collaborative efforts. The papers presented here are a testament to the McNair Scholars’ hard work and to the tremendous support of faculty mentors who supervised these projects over the last one to two years.

The McNair Scholars Research Journal is the culmination of the research component of the McNair Scholars Program. The primary goal of this component is to engage students in the research enterprise at the undergraduate level in order to develop the analytical and methodological skills, academic sophistication, and confidence that will make them successful students in graduate school. It also provides an opportunity for students to publish their research and gain an early understanding of the critical role that publishing will play in their academic careers.

Maintaining a high standard of excellence, this year’s McNair Scholars developed this research demonstrating their readiness to engage in the demands of research at the graduate school level. Every year we marvel at the growth of each of the McNair participants as they develop into Scholars capable of meaningful research. To each of them this is a sincere thank you for allowing us to be a part of that process and for participating with us. It is fitting that your efforts culminate in your recognition through this journal.

We also extend our deepest gratitude to all the faculty mentors who have guided and supported McNair Scholars throughout the life of our program. You have been instrumental in providing a solid research foundation giving them the ability to enter graduate school with confidence.

Gregory Martinez  
Director

Helen Barnes  
Program Coordinator
**Boise State University McNair Scholars Graduate Institutions**

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<table>
<thead>
<tr>
<th>Name</th>
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### Class of 2005

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<td>Psychology/German</td>
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### Class of 2011

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<td>Levin Welch</td>
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</table>
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<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Details</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abraham Calderón</strong></td>
<td>Sociology Mexican Politization: Cultivating Optimism, Fostering Community</td>
<td>1</td>
</tr>
<tr>
<td><strong>Marybel Cortez</strong></td>
<td>Criminal Justice Direct v. Indirect Exposure to Trauma: An Insight to Officer Coping Mechanisms</td>
<td>17</td>
</tr>
<tr>
<td><strong>Ericka Hill</strong></td>
<td>Psychology Recollection of Middle and High School Years: The Effect of Parental Involvement on College Students’ Motivation</td>
<td>29</td>
</tr>
<tr>
<td><strong>María Elena Martinez</strong></td>
<td>Bilingual Education Expanding the Conversation: Factors Influencing Quality Multicultural Literature in Western United States Elementary School Libraries</td>
<td>39</td>
</tr>
<tr>
<td><strong>Nilab Mohammad Mousa</strong></td>
<td>Computer Science Avida Checkpoint/Restart Implementation</td>
<td>49</td>
</tr>
<tr>
<td><strong>J. Osciel Salazar</strong></td>
<td>History Una Historia Rebelde: Corridos and the Sixties</td>
<td>54</td>
</tr>
<tr>
<td><strong>Zachary M. Turk</strong></td>
<td>Economics Will a New Input Strategy Be Warranted in Non-Irrigated Corn Production under Global Climate Change? An Analysis Using Corn Production in the Midwestern United States</td>
<td>64</td>
</tr>
<tr>
<td><strong>Kenneth J. Winkleman</strong></td>
<td>English A Matter of Principle: The Influence of America’s Declaration of Independence on Post-Declaration Literature</td>
<td>81</td>
</tr>
</tbody>
</table>
Mexican Politicization:
Cultivating Optimism, Fostering Community

Abraham Calderón: McNair Scholar
Dr. Arthur Scarritt: Mentor
Sociology

Abstract

This study addresses how Mexican immigrants become politicized in the absence of appropriate opportunities. Drawing from 20 qualitative interviews of Mexican immigrants residing in Idaho, a key contradiction is found between active words and effective inaction. That is, respondents want to participate but do not. To address this contradiction this study identifies key processes that enable and curtail Mexican immigrant community engagement as part of their daily struggle for full incorporation into US society. I argue politicization is the result of the capacity to harness optimism and collective orientation while being able to defy the challenges of isolationism and individualism. The severe anti-worker and anti-immigrant environment in Idaho presents a perfect place to study this because it provides insight into how limited opportunity influences immigrant methods of addressing workplace and community grievances.

Introduction

In the face of economic, social, and political marginalization, how do Mexican immigrants become politicized and sustain the capacity for mobilization? In Idaho, working-class Mexican immigrants arrive to a reception with little to no resources in place to aid in their transition to life in the United States. Immigrants must rely on their social capital (e.g. family, friends and acquaintances from same community of origin) to help navigate the institutions with which they must now interact daily (see, among others, Mines 1981; Massey et al. 1987, 2003; Zavella 2011). In addition, working-class immigrants arrive to minimum and subminimum wage jobs, predominately within the secondary labor market, where they are subject to exploitation and discrimination. Often the work is seasonal and precarious with virtually none of the protections given to native workers (Chavez 1998; Barerra 1979; Bonacich 1972). Christian Zlolniski describes migrant workers, and the undocumented even more so, as comprising a subproletarian class (Zlolniski 2005 found in Zavella 2011). Additionally, as a right-to-work state, Idaho offers little by way of protections to any workers. Union rates and wages in the state are some of the worst in the country (Hogler 2011; Schwantes 1991).

Nonetheless, as is the case across the nation, some Mexican immigrants in Idaho have been mobilizing and staging demonstrations despite adverse circumstances. These manifestations of resistance stand in defiance to the highly vulnerable position immigrants occupy. What accounts for mobilization within this hostile environment? Similar questions have garnered the attention of many immigration scholars in the social sciences (Bada et al 2010; Pallares and Flores-Gonzalez 2010; Voss and Bloemraad 2011; Gleeson 2008; Ness 2005; Delgado 1993; Cameron-Ruiz 2000). In their recent book Voss and Bloemraad (2011) ask, “What would possess people who have everything to lose by coming out into the limelight to march, even though the cost could be permanent and definitive exclusion?” In addition to examining this issue, I seek to explore how mobilization under extreme conditions can inform what is known about maintaining politicization between opportunities regardless of context. In other words, can we identify the necessary infrastructure that catalyzes mobilization when needed? Insights gathered within an extreme context are informative for more amicable immigrant settings because they are proven effective even in the absence of favorable conditions. Despite noteworthy political activity occurring in Idaho, community involvement has been limited when compared to the number of political events organized by immigrant activists. Therefore, to highlight the factors creating politicization and allowing for immigrant collective-action, I first identify the circumstances keeping many from participating.

I argue that immigrant incorporation at work and society engenders isolationism and detachment, negating awareness of exploitation and desires to act collectively. My findings show the key to overcoming depoliticization and maintaining politicization is the acquisition of civic skills and development of community. Integrated into the
bottom of the split-labor market, immigrants are intimately aware of exploitation and discrimination. Still, the secondary sector of the split-labor market obscures the ways in which immigrants are divided and inculcates a fatality about political involvement as they have no means for addressing workplace issues. Beyond the workplace, immigrants get caught up in the welter of providing their own daily needs, strongly reinforced by the dominant culture’s pervasive liberal individual values, leading to further individualism and division. Ultimately, these processes gravely undermine the viability of action for the depoliticized Mexican immigrants interviewed.

In stark contrast, those who are able to act have, in a variety of dynamic ways, acquired civic skills, and thereby confidence, producing a capacity to act politically. Experiences ranging from involvement in a labor union, to a small immigrant run grassroots radio station and even experience with the US legal system work to generate politicization. Importantly, all of these generated some form of community, however minimal, beyond home and work.

I maintain that, through building community, members are able to come together in cooperation for common purposes and consequently political mobilization becomes possible. With time, a reinforcing positive cycle of community and politicization is able to harness desires to participate and maintain politicization between opportunities.

**Immigrant Mobilization: A Background**

The recent struggle for immigrant rights and full incorporation within the United States has been waging since the turn of the century. In the Spring of 2006, in the largest mass demonstrations in US history, millions of immigrants across the country took to the streets in vehement protest of the Border Protection, Anti-terrorism, and Illegal Immigration Control Act of 2005 (Pallares and Flores-Gonzalez 2010; Voss and Bloemraad 2011; Bada et. al 2010). Better known as the Sensenbrenner Bill, this proposed legislation sought to criminalize unauthorized immigration as well as implement measures to curtail further unauthorized immigration and punish undocumented immigrants already in the US. The massive response by the immigrant community, particularly the Mexican immigrant community, was unprecedented. Since then the movement for humane immigration reform has been building momentum on the shoulders of thousands of active Mexican immigrants all around the country (Bada et. al 2010; Cordero-Guzman et al. 2008).

Seeking to explain the mass demonstrations in the Spring of 2006 and immigrant mobilizations more broadly, Bloemraad and Voss (2011) draw from existing political behavior and social movement approaches to suggest a paradoxical mix of threat and faith motivate large-scale mobilizations. Immigrants have reacted to perceived threats stemming from a string of anti-immigrant legislations as well as an increasingly hostile socio-political climate towards Latinos and immigrants. Faith in the political system, it is argued, is exemplified by the overwhelmingly peaceful nature of the protests and lack of incidents throughout the Spring of 2006 (Bloemraad and Voss 2011; Segura, Bowler and Pedraza 2011).

Bloemraad and Voss also stress the importance of framing and identity processes in allowing for a diversity of peoples to come together for a common issue. There has been an increase in the sense of shared group identity around the pan-ethnic label of “Latino” that contributed to the mobilizations in 2006 and immigrant rights movement more generally. A shared sense of injustice, discrimination, and marginalization has fostered an increase in Latino unity. In addition to unity based on shared group identity, another source of solidarity has come from framing the immigrant plight in terms of family unity, highlighting the effects of deportations and family separations. By framing the issue as an attack on families, an appeal is made to what is thought of as core American value and extends the issue beyond those who are directly affected (Pallares and Flores-Gonzalez 2010; Bloemraad and Voss 2011).

Scholars argue, in addition to increased solidarity and wider appeal, mobilizations were and are in large part the result of long-standing cooperative efforts and networks of immigrant-serving nonprofit organizations or what are referred to as mobilizing structures (Bloemraad 2006). Bloemraad and Voss identify ethnic media, the Catholic Church, and unions as providing critical leadership. The scope of actors extends to a dense network of community-based organizations, social service providers, schools, families, elected officials, and hometown associations (Cordero-Guzman et al. 2008; Bloemraad and Voss 2011; Flores-Gonzalez and Pallares 2010). Furthermore, they argue through the activities of nonprofit organizations, many immigrants learn about policies that may affect their well-being as well as what they can do individually and collectively to participate in civic and political activities (Cordero-Guzmán et al. 2008; DeSipio 2011).

This scholarship informs my present study by presenting insights that contribute to a better understanding of immigrant politicization around the country. These findings serve as a reference to my analytical perspective as I
reconcile them with my own findings based on fieldwork with immigrants in Idaho. Despite serving as a frame of reference, investigations raise important questions to be addressed. First, scholars raise the vexing question of whether mobilization in the Latino community can be sustained into a lasting social movement (Bloemraad and Voss 2011). Second, the literature does not fully address the manner in which an awareness of threats can develop in other arenas such as the workplace and how these might influence participation. Finally, what prevents a shared sense of marginalization from becoming the unifying force scholars have found elsewhere? To help address these concerns, I turn to literature on new social movements, shifts in the US labor structure and production politics.

Interesting links have been made within new social movements literature regarding the manner in which a variety of unpredictable actors and circumstances can create the infrastructure for mobilization to occur. Viewed through the lens of cultural politics, these processes are not homogeneous but rather internally discontinuous and uneven. Transforming conceptions of democracy, citizenship, communities is motivated by the dynamics of culture in unpredictable ways (Alvarez, Dagnino and Escobar 1998). The literature above identifies a variety of actors and networks contributing to mobilization, indicating the way in which community creates collective action. Cultural politics allows us to see the process of creating community in novel ways while at the same time highlighting the central role that community and culture takes in sustaining politicization.

Looking at immigrant economic incorporation and dynamics within the workplace is also valuable to our understanding of immigrant collective-action as it is a context informing immigrant behavior. Due to the rise of neoliberal economics, the US economy has transitioned away from manufacturing and towards a service based economy (Ness 2005; Durand, Massey, and Malone 2002) changing with it the dynamics of immigrant incorporation. At the bottom-tier of the split-labor market, new mostly service industry jobs are created but at much lower wages and worse working conditions. As companies seek their competitive advantage through the use of low-wage labor, low-skill immigrant labor is seen as ideal because an undocumented legal status makes them more tractable as they constantly fear deportation. Typically, working-class immigrants also understand less than do native-born workers about established labor standards, and even low US wages represent an improvement over earnings in their home countries. They are also known as target earners that gain status in Mexico if not in the US (Massey, Durand and Malone 2002; Ness 2005).

Also informing the way we look at workplace resistance and awareness of exploitation, production politics tells us that firms leverage workers’ labor market vulnerabilities and dependence on their jobs to induce greater willingness to accept conditions and terms at work (McKay 2006). What McKay calls ‘attachment’ is determined externally because of the lack of alternative work opportunities within the secondary labor market or family responsibilities (alienative commitment). Under coercive conditions worker consent is not necessary, making it possible for exploitative working conditions to be less obscured as in a despotic labor regime (Burawoy 1982; Lee 1998). Acknowledging the factors preventing resistance at work, how does awareness of exploitation translate to political behavior in other spheres of immigrant life?

Methodology

Seeking to add to our understanding of these concerns, I spent six weeks conducting twenty open-ended qualitative interviews of Mexican immigrants residing in Idaho. The study was done in Idaho in part due to practicality but also because its socio-political conditions provide unique opportunities for examining Mexican politicization. Idaho is a staunchly conservative state with 28 Republicans in the Senate to just 7 Democrats. In the house there is a ratio of 57/22 Republican/Democrat. And there is a Republican governor as well (idaho.gov). With this political composition come partisan positions in which Republicans oppose any pro-immigrant legislation. As mentioned above Idaho is also a “right to work” state.

Anti-immigrant and anti-union conditions point to Idaho having some of the worst conditions for immigrant collective action (Schwantes 1991). Therefore, the manner in which some are able to participate provides insights into key factors driving involvement. Studying one of the worst contexts for Mexican politicization also highlights the limits of disenfranchisement. Working-class Mexican immigrants possess unique cultural capital stemming from their immigrant experience and position in American society. Identifying what their cultural capital looks like and the specific nature of depoliticization impart the most effective strategies for fomenting greater politicization. In other words, if we know the extent of existing depoliticization within one of the worst locations for immigrant collective action then the means through which action is possible become the most logical for generating more involvement.

The interviews conducted encompass life, work and community involvement experiences within both immigrant communities of origin and communities of reception, specifically Idaho. The interviews range from one
to two hours and a few even as long as three hours. Interviews were done in Spanish then transcribed and translated to English. I found participants through a combination of cold calling and snowball sampling. All but three respondents were over the age of thirty-five and two were over the age of sixty. All participants have lived continuously in Idaho for at least eight years and as long as thirty-five years. When talking about participation, I differentiate between respondents who actively participate in their Idaho community to those who have little to no community interaction. By ‘actively participate’ or ‘active’ I mean they have played a contributing role in the coordinating and carrying out of community events aimed at either solving or bringing awareness to a community issue, as opposed to simply attending political events for immigrant rights. I place this bar high because advocating for an issue conveys deep commitment and the ability to overcome isolation and detachment from coethnic community.

Mobilizing Words, Immobilized Action

During my study a key finding guided my inquiry. Eighteen of the twenty immigrants interviewed identify issues surrounding immigration as their primary community concerns and claim unity and active involvement is the only way to effectively address these concerns (see Appendix A). Despite awareness and desire, actual participation has been limited. Of the eighteen, ten have had no active involvement in any of the political activities, though they affirm being aware of the community events taking place. As interviewees acknowledge, there have been numerous opportunities for participation.

As I have stated, despite the negative circumstances in which immigrants find themselves in, there has recently been a wave of collective political activity in Idaho. As is the case throughout the country, activity is centered on immigrant rights. On May 1st of 2013, in conjunction with national mobilizations, there was a march for family unity through downtown Boise which was attended by roughly two thousand according to news reports (Idaho Press Tribune). In addition to the march there have been other activities including a thirty-mile walk from a labor camp in the rural town of Wilder to the office of Republican Representative Raul Labrador. There have also been more traditional political activities such as petition drives, phone calling to congressmen, and attending town hall meetings. All of these activities were done with the intent of urging the state’s national representatives to support the movement for humane immigration reform.

While these activities have been taking place and are certainly noteworthy, like my interview subjects, the level of support from the immigrant Mexican community has been weak at best. Each public community action has been extensively promoted on local Spanish radio stations. Community organizers and volunteers have engaged in outreach at churches, community gatherings, door-to-door canvassing and placed hundreds of phone calls and still the community response has been well below expectations each time. The lack of community mobilization given the level of outreach is especially puzzling when contrasted with the overwhelming desires to participate collectively expressed by interview subjects. What is keeping immigrants from participating even though they want to? How can we interpret this evident contradiction of mobilizing words and resultant inaction?

Process of De/politicization

In what follows, I examine this key and paradoxical finding. To begin I describe the common manner in which working-class immigrants are integrated into the U.S. labor structure. I then establish how experiences with work and social-political conditions instill awareness to individual and collective issues facing Mexican immigrants. I enter a discussion about the key points of diversion between the politicization for some and depoliticization for others. First, I explore the character of immigrant depoliticization with efforts to understand the scope of the challenge for active involvement. I then demarcate immigrant participation in Idaho by demonstrating who is participating and how they are able to become involved. To conceptualize the process I simplify the factors identified as most relevant (see Figure 1).
Economic Integration: The Split-Labor Market

Economic stability is one reason Mexican immigrants move to the US. Seen as low-skill labor with low human capital, a majority of working-class Mexican immigrants are incorporated to the lowest sectors of the US economy (Massey, Durand and Malone 2002; Ness 2005). With little to no opportunity for advancement a great majority of “unskilled” workers are kept at the bottom of the split-labor market. A very small number of workers may be given access to a limited number of positions with some level of authority (Chinoy 1992; Lynd 1985; Robinson 1984; Reich 1973; Burawoy 1979; Bonacich 1972; Kalleberg and Sørensen 1979).

As several interviewees indicate, it is workers who are most willing to put personal and company goals before their coworkers whom are given these positions. Bottom-tier workers view them with resentment, as they become the new face of exploitation. Sergio, now a restaurant worker, says he has experienced this at almost every job he has been at. When asked about the problems he has had with supervisors he states:

“No, the bad experiences have been probably with the supervisors who were my own people. You can sometimes feel the pressure that since they are the ones in charge they want to put out more work. Perhaps because they earn more and benefit more… One’s own people are the ones who pressure you most and go at you the hardest… Bosses will look for people who are willing to pressure people more and produce more. If they see that it is convenient for them they will get you as a supervisor.”
Immigrants are caught in a system that explicitly rewards individualism, conformity and a willingness to exploit your peers. In order to make it, many are forced to adhere to these standards (Chinoy 1952; Lynd 1985). Another respondent states, “The only way immigrant workers are treated equally to native workers is by giving extra effort, starting no trouble and being in agreement with the bosses agenda.”

The split-labor market affects all working-class immigrants to varying degrees—whether workers conform and their ambition allows them to obtain marginal authority over their co-workers, are passive and merely endure their situation, or they resist conformity and challenge exploitation (Chinoy 1992). Subjected to similar conditions and experiences, workers reside along this continuum of possible outcomes. Encountering these experiences, workers develop noteworthy awareness of their circumstances.

**Awareness**

The Mexican immigrants I interviewed articulate thorough descriptions of the issues they face, demonstrating an acute understanding of their position in the United States. The level of awareness present among most all respondents is one of my most significant findings. This may surprise some given what has been written regarding the absence of worker class-consciousness (among others, Adorno 2001; Marcuse 1964) and the manner in which the capitalist mode of production obscures and secures surplus labor-extraction (Burawoy 1982).

Working class individual and collective experiences endured while living in the U S has resulted in what can be deemed as Mexican immigrant cultural capital. By being affected in multiple spheres (economic, social, and political) Mexican immigrants are constantly negotiating their exploited and marginalized reality. Without a viable means of addressing issues individually, working-class Mexican immigrants see collective action as their only recourse.

Upon arriving immigrants interact with their new environment and quickly become intimately aware of the unfavorable conditions facing them. As I suggest in the previous section, work-related issues are the most immediate. Because of the lack of alternative work opportunities within the secondary labor market and their precarious status as immigrants, the complete obscuring of exploitative working conditions is not necessary to secure worker commitment (Burawoy 1982; Lee 1998). At work, immigrants are discriminated against, given the most laborious jobs with the least compensation, provided little to no prospects for advancement, and face difficulties having their issues addressed when they bring them forward. Precarious conditions and the inability to address issues inspire resentment in many immigrants who feel like employers are abusing and taking advantage of them. Feelings of being exploited continue even after workers find stable employment. Miguel, a father of five and factory worker of over twenty years states:

“Well I feel like I have been… I think it is the feeling of all workers, that they are exploited: that they are not paid sufficiently according to their work and that they are abused in that aspect. I have felt this a lot because to begin at such a minimum wage and from there they cannot raise you each year a quarter or fifty cents. For the years you have been working there what you earn is too little. If the company feels they pay us a lot I think they are wrong because in reality one is leaving everything there. One’s life is staying there and they do not provide little else other than staying alive.”

Perceptions of exploitation and being undervalued are enhanced when others, who they feel are less deserving, pass them over for jobs. Sergio’s experience in a hospital kitchen is exemplary. When speaking about his supervisor’s treatment he says:

“The thing is that this person doesn’t let you advance. In my case she says it is because I don’t speak good English. I feel like I am a really good worker, like I do a good job and that is why they have me there (in the dish room). She says it is the language. She gets frustrated because she doesn’t understand me. I don’t know. I get along with everyone.”

[Interviewer] “Do you think this experience is unique to you or do others face the same treatment?”

“No there are others who she also treats like that and they are also Hispanic. There is another coworker who… she uses the excuse that I don’t speak good English but my coworker speaks very good English, he writes and reads it also, but she won’t give him a chance to get another position. Clearly it is not about
English. If it were about English why wouldn’t she move my friend? There have been opportunities. So it is not about English.”

Statements like these are common and speak to the discrimination and racism many feel directed at them from their employers. This discrimination has tangible ramifications for workers who feel their wages and work positions are affected as a result. In combination with a labor structure that offers few opportunities for advancement, racism and discrimination from management all but consigns immigrant workers to the most undesirable work. Futility is not a surprising result given a prolonged period under these circumstances.

Besides issues at work, immigrants contend with the threats seen as coming from an anti-immigrant political atmosphere. For those who are undocumented the potential of being deported and separated from loved ones is a real and active threat and they are reminded constantly by news reports. Asking for opinions of the biggest issues facing the Mexican community elicits a variety of responses. Consistently however respondent issues revolve around and stem from immigration situations and problems with status. For Alicia and others it is the treatment and conditions undocumented workers endure,

“We are very exploited sometimes by the miserable wages they pay us, the humiliations we have to endure, and many other things they do to us. We are discriminated and treated badly. They cannot find anything else to do to us. All because of not having a piece of paper.”

Some, such as Lorena, cite the effects deportations are having on kids,

“There are many kids who stay behind when they deport their fathers and even when they deport their mothers. Those kids are left with people who aren’t their parents. Those kids suffer because they aren’t with their parents. Some older kids remember their parents and can be traumatized by having to be removed from their parents and have adoptive parents.”

For Cristina it is about family more generally:

“The security of the family is number one, it is the nucleus, the factor of humanity. And it is exactly what the immigration laws in the US are destroying. They are destroying the most important nucleus of a society which is the family. Without it the only thing we can see is a society in decay. We are talking about more than 11 million immigrants in the United States. So many families have already been affected.”

Pedro expresses concern for discrimination:

“Discrimination is a very important point because particularly in this state one says that no there is no discrimination but discrimination is at all levels. At any moment one is being discriminated and whether one does not feel it or one acts like they did not see it, it is affecting you: police who stop you because you are brown or white people who treat you badly because they think you are undocumented. These things happen.”

The issues presented by respondents are part of their lived reality. The lived reality of working-class Mexican immigrants comprises their cultural capital. Working-class immigrants are vulnerable in all spheres: economically within the secondary sector of the labor-market; socially due to racism and xenophobia; and politically due to immigration status and immigration enforcement policies. The immigration situation affects parents (worker/nonworker), kids and extended relatives. Each sphere of vulnerability is affected by and is closely tied to their economic integration. As Massey et. al. (2002) and others suggest, immigrant vulnerability make working-class Mexican immigrants the ideal candidates for the U.S. economic structure dependent on cheap and accessible surplus labor (Piore 1979). As long as vulnerabilities and this form of economic integration persist, so too should the makeup of their cultural capital.

Knowing the problems facing them, immigrants acknowledge and desire collective action as the means of having them addressed. As I have stated above however, awareness and desires have not been enough. Awareness should lead to ethno-class consciousness in which workers see each other in common circumstances. Let us first examine what keeps immigrants from being able to act on stated desires as it is the dilemma vexing the majority of respondents and Mexican immigrants. Exposing the limits of depoliticization allows us to better understand what
exactly those who do become active are overcoming, while underscoring the factors allowing them to do so and providing prospects for reproducing enabling factors.

**Depoliticization**

As we have seen, immigrants are aware of their exploitative economic integration into the bottom of the split-labor market. However, there are limits to general workplace awareness of exploitation. Immigrant economic integration sufficiently obscures the divisions created among workers. Many workers fail to recognize the collective conditions they share with coethnics and instead attribute differences and conflict to regional rivalries or character flaws. Others who do recognize shared concerns and seek to have their issues addressed are met with unresponsiveness by management, coworkers and even union representatives. Describing the role of the union at work Miguel, a union steward, states:

“What happens is that the union has always been like an intermediary between the workers and the company but he (the union representative)... He does not inspire confidence in his clients. A lot of people end up keeping quiet or they defend themselves how they can. What happens is that there, there is a lack of confidence in the delegate and we accept the union simply as our representatives in the negotiation of the contract.”

Without the capacity to address issues even in unionized workplaces workers are made aware that there is virtually no recourse for confronting individual or collective grievances. With no prospects for advancement and no incentive beyond not getting fired, workers focus on their own tasks which makes worker solidarity difficult to achieve. Much has been written on the split labor market and its adverse effects for all workers (Chinoy 1992; Kalleberg 2011; Bonacich 1972; Schor 2008) but it seems it is particularly damaging for Mexican immigrants, as they have much less recourse against it (Barrera 1979; Bonacich 1972, Chavez 1998) and are resigned to their situation.

Entrenched divisions among Mexican workers continue beyond the workplace and into social life. The ‘every person for themselves mentality’ that is created at work is constantly reinforced in a society in which liberal individualism, the personal pursuit of wealth, material goods, and social status, is the way of life (Bellah 2008). Adopting this mindset leads to a continual disassociation with the collective framework acquired within their communities in Mexico. It also leads to continued isolationism and detachment from the community in which they live. I asked participants how their perspective towards community involvement has changed since migrating. Miguel states:

“When I came I had a perspective that was more left. With time I have become more individualist. One is made mentally more conformist and individualist in the sense that one has to fight for one’s own things without thinking about how people organized and participating can accomplish much more.”

Living in the United States has caused a change in Miguel’s behavior. He implies he had a more collective orientation in Mexico before coming to the US. These changes are symptomatic of the process immigrants undergo within their new work and social environments.

At the same time we must acknowledge the reality that being relegated to unstable low-wage work places immigrants, especially those with families, in survival-mode as immediate physiological needs take precedence. Some have cited the lack of individual resources and time for the inability of immigrants to act collectively (DeSipio 2011). For many Mexican immigrants, living paycheck to paycheck becomes a normal facet of life in the US especially as the allure of material goods works to trap them in debt. When asked to elaborate what things he feels he is fighting for individually Miguel says:

“The routine of life in the US: bills, family, work, the house. One is absorbed with the routine of work and is pressured by economic situations that one is barely getting through. Because of all of the hours that one has to put into working to get the family ahead one is not left with time to participate in other things…”

Life described by Miguel suggests working-class Mexican immigrants are becoming typical overworked Americans as described by Schor (2008) where increased productivity leads to increased consumption not leisure. Absorbed by work and consumption, worker isolation becomes a normal lifestyle. As division and isolationism take hold among
working-class immigrants, committing time, effort, and acting in solidarity with a community in which you personally have little investment in is difficult. Particularly when inter-worker animosity is generating and entrenching factionalism.

Seeking to explain the lack of involvement by the immigrant community respondents, active and inactive, suggest lack of participation is due to a lack of unity. Based on the lack of support for pro-community events this conclusion is understandable and even logical. However, I suggest lack of support stems from a bigger problem: the absence of community which is caused by isolation and detachment. Respondents on the other hand argue that the lack of Mexican unity has mainly to do with deficiencies in Mexican culture such as jealousy, feelings of superiority and, as many put it, “forgetting where they came from.” Several active participants share their difficult and largely unsuccessful experiences of trying to get people involved. Vicente shares his thoughts on his attempts to organize field workers upon his arrival to difficult working conditions,

“That is the saddest thing I have seen in this country is that us Mexicans are the most sectarian people of the world. I put it as a very bad sickness. We are very sectarian. What does that mean? Here are some from one state, here are those form others and we separate ourselves. Instead of uniting ourselves we scatter. All of that happens too much. I ask, why in Mexico are we more united and here we cannot unite when we are outside of our country? It can’t be, we are very sectarian. We separate ourselves: those from Zacatecas over here; those from Oaxaca here; those from Jalisco here; those from Sinaloa here; those from Michoacán here; Guanajuato here. Instead of coming together we separate ourselves. It was very difficult to work in that time with the community.”

Vicente’s comments exemplify the prevailing idea among respondents that it is part of Mexican culture to become divided. Rather than citing cultural deficiency, I argue, “forgetting where they came from” and the factionalism Vicente and others describe are also symptomatic of the labor structure they are integrated into and the new culture influencing them. Essentially, the split-labor market and hostile political reception creates divisions among Mexican workers (Borjas 1987) which then extend and develop beyond the workplace as they get caught up in the welter of providing their own daily needs, strongly reinforced by the dominant culture’s pervasive liberal individual values.

In sum, while immigrants have a notable understanding of their workplace exploitation, having no viable means of resolving issues leads to futility of general political engagement. Integration into the normal cultural and political realities of the US stressing liberal individualism alongside longer work hours (Schor 2008) sufficiently creates division and isolation between workers. Unable to address workplace grievances, divisions and individualism are reinforced in society. With everyone isolated and detached community becomes difficult to achieve. Therefore, despite knowing they are being exploited and desiring collective action, continued isolationism and individualism are shown to be more probable. And yet as I have alluded to previously, a notable number of immigrants facing these same circumstances are able to act collectively and maintain politicization. Understanding how active immigrants are able to overcome detachment and isolationism is the key to resurrecting the immigrant community and inducing further collective action.

**Politicization**

I argue that two different but potentially complementary factors, civic skills and community, are the means through which politicization not only occurs but also is maintained. For active immigrants the acquisition of civic skills (i.e. knowledge and an understanding of the US system and their rights within the system) allowed them to gain the confidence and optimism necessary to become politically involved. Acquired in a variety of ways, civic skills prove to be effective means of overcoming futility and restoring faith in the system by providing immigrants an avenue to engage US political and societal institutions in cooperation with others.

Maintaining politicization is possible when, in confluence with civic skills, community or a culture of common goals, attachments and interdependency is established among peoples with shared backgrounds. The dynamic nature and politicizing capacity of acquiring civic skills and building community is exemplified by the immigrant run grassroots radio station in Burley, Idaho KBWE Radio Voz de Magic Valley. Unexpectedly, the community events: fundraisers, cultural celebrations, and dances—coupled with relevant programming aimed at informing listeners about interacting with US institutions in daily life—created the infrastructure needed to easily mobilize community members for political action. Similarly, new social movement theorists have documented various mobilizations arising from non-linear, unexpected and novel circumstances.
Utilizing a cultural politics framework, new social movements theorists maintain that culture is enacted to challenge or unsettle dominant political cultures. To the extent that social movements shake the boundaries of cultural and political representation and social practice, calling into question even what may or may not be seen as political (Alvarez, Dagnino and Escobar 1998). Therefore in exploring the political in social movements, politics are more than just a set of specific activities (voting, campaigning, lobbying) that occur in clearly delimited institutional spaces such as parliaments and parties; it must also be seen to encompass power struggles enacted in a wide range of spaces culturally defined as private, social, economic, cultural, and so on. Cultural politics therefore seeks to move beyond static understandings of culture and the politics of representation and similarly transgress the narrow, reductionistic conceptions of political culture, citizenship, democracy and community (Alvarez, Dagnino and Escobar 1998). Reconceptualizing these notions necessitates that what elicits the political also be reevaluated and seen in ways that allow for alternative and perhaps unconventional methods of producing politicization.

Many instances of unexpected mobilization have been documented in the new social movements literature. For example, Rubin maintains that it was the “fostering of a new and hybrid political culture that enabled COCEI to secure its power even as neoliberal economic restructuring and the demobilization of popular movements dominated policymaking elsewhere in Mexico and Latin America” (in Alvarez, Dagnino, and Escobar 1998). Starn documents what started as rondas campesinas (peasant rounds) or community efforts to combat cattle rustling in highland Peru and resulted in political demonstrations against things like hikes in interest rates in the Agrarian Bank (in Escobar and Alvarez 1992). Scarritt (2013) chronicles the revitalization of one Peruvian village after Evangelical Christianity took hold and transformed into a movement. Like these there are other examples (among others Lind, Garcia, and Findji in Escobar and Alvarez 1992) which highlight some of the unforeseen ways in which mobilization can occur.

From my own findings the example of immigrant run grassroots radio station in Burley, Idaho KBWE Radio Voz de Magic Valley exemplifies the politicizing effects that cultivating optimism and fostering community can have. This Magic Valley town of only 10,000 accounted for 600 of the roughly 2000 people at the May 1st 2013 march in Boise. The radio station was able to accomplish this after having been on air for only one year. I went there and interviewed 3 people, one of whom helped put the station together. Remembering a conversation he had with the person who first posed the idea he says:

“I remember asking, “what do you want a radio station for?” “Well a radio station can be very beneficial because you are able to educate people, especially those who work in the fields. You can tell them not to let ranchers abuse them and where to go for help… There will be people who will help us and unite with us. Perhaps lawyers, and we will be able to inform people and help them in however we can.” “but this is going to be a Mexican radio station for the community?” “Yes, yes, that is what we need here. We don’t have a voice here and with a radio we are going to have a voice.”

The radio station has been able to engage the community in a variety of ways including providing information and education. The station is run by volunteers in the community who are slotted one hour per week to run their own programming. Educators, lawyers, labor activists and others use the medium to inform listeners about issues and have live discussions with guests and audience. One of the persons I interviewed is part of a group of women who produce a program dedicated to women’s issues. She says,

“We give information about women’s issues, things like abuse, women’s shelters, and other things we find useful for women as moms, students or whatever. We try to provide support.”

In addition to providing information, the radio station holds fundraisers, dances, and cultural celebrations. These community-building activities are non-political and are well supported by the community. The radio station has also provided an avenue for community members to get relief in event of a personal tragedy.

“A young woman, a single mother, had her trailer burn down. She was not there when it burnt down. She was only left with the clothes she had on, her kids, the clothes they had on and her car. That was all she had left. Everything else had burned. That lady came here… we had only had the radio for three months when this happened. She came here and she told us her story. We let her sit there in front of the microphone, put her on the air and had her tell her story. She began telling her story and it was sad because as I said she was left with nothing and she is a single mother. As soon as she began to talk, within fifteen minutes people began to come like if they were going to the theater or the dance. People would come in and give her 15, 10, 20, 5, some in envelopes… in three days after having her trailer burn down the woman recovered everything, everything. She came back and thanked everyone.”
Through powerful displays of solidarity people have come to form strong bonds with each other. At the same time, the radio station has been able to create a meaningful relationship with the community. By building community through activities and education, the radio station and community volunteers are able to mobilize people to stand in solidarity for their collective interests.

As community becomes established and members are able to come together in cooperation for common purposes, whether for a grassroots radio station or to protect each other’s livestock, political mobilization becomes possible when needed. As community develops, relationships strengthen and become widespread leading to potentially more politicization. A reinforcing positive cycle of community and politicization is able to harness desires to participate and maintain politicization between opportunities.

Optimism through civic skills

For many, fear is seen as one of the greatest obstacles to immigrants becoming involved (Delgado 1993; Ness 2005; Bloemraad and Voss 2011). In the case of active immigrants in Idaho, acquisition of civic skills is the common thread in all of their stories. This specific form of education, rights acquisition, is pivotal for immigrants overcoming the uncertainty of being involved. Key experiences provided confidence and allowed them to overcome the apprehensions they felt from being in a foreign environment. Despite the common result there are a variety of ways in which immigrants gained these skills. For one active immigrant, it was involvement in the union at work. For others, it was the training they received at a grassroots radio station (noted above). And still for others, it was the fortunate experience of becoming residents and then citizens shortly after arriving. Pedro, another active immigrant, says it was his experience with the American legal system that removed the apprehensions he had as an undocumented immigrant. He says:

“The lawyer explained to me the process. I had to do this. I had to do that... If I did everything they asked I would be okay. After doing everything I learned that I don’t need to be scared about getting involved or when I see police. I know I have rights as a person and immigrant and they cannot arrest me if I am obeying the laws. That is why I am not scared about going to the marches or things like that. I try to tell others there is nothing to fear but they don’t really believe me.”

Faced with criminal charges, this experience actually became the catalyst for Pedro’s community involvement. Learning about his rights and how the legal process works empowered Pedro to the point that he is now inviting others to participate without fear. Education training like the kind Pedro received enables politicization by providing knowledge to conquer fear and uncertainty of becoming politically involved. As the diverse list of examples demonstrate, gaining confidence and the skills necessary to participate and overcome detachment can come in a number of very distinct ways. Active immigrants articulate statements of hope and confidence in creating change through community involvement, thereby, suggesting that gaining civic skills has led to a restoration of optimism.

Conclusion

In this article I have sought to increase the understanding of how mobilization in the Latino immigrant community can be sustained. I argue politicization is the result of the capacity to cultivate optimism and foster community. I find that optimism through the acquisition of civic skills is an effective means of overcoming isolationism, detachment and futility. Civic skills provide immigrants with the knowledge and confidence needed to mobilize high levels of awareness and desires to participate collectively in a foreign society.

Confidence is also drawn from the flexibility of a non-linear and somewhat unpredictable process of building community. Fostering community is the crucial step in developing and sustaining collective action. Examples from the new social movements literature and our own case of a small Idaho town demonstrate the variable but highly compelling potential of community. Having built community, by whichever dynamic means, a sense of attachment and social responsibility among members potentially allows awareness and the desire to be mined into mobilization at a communal level. As community develops and relationships among members strengthen, initiating politicization becomes easier and more widespread. Over time a reinforcing positive cycle of community and politicization is able to maintain politicization between opportunities.

In this article, I have also explored how workplace experience in a highly hostile environment affects immigrant awareness and participation. I draw links to the effects of economic integration into the bottom of the
split-labor market and the adoption of the values associated with liberal individualism. I maintain that by doing so we can begin to understand why immigrants have become detached from each other, why there is no real community and thus very little participation despite awareness of threats (i.e. exploitation, discrimination and deportation). It also sheds light on what prevents a shared sense of marginalization from becoming the unifying force others have noted (Voss and Bloemraad 2011).

Trapped within the bottom sector of the split-labor market immigrant workers have little to know opportunity for advancement. Although workplace oppression is visible to all, inter-ethnic divisions are largely obscured and function to isolate workers from each other. Unable to address workplace issues even in a unionized workplace, much less within non-union, workers are resigned to a futile existence. Divisions and detachment from others are reinforced in society as individual interests and material advancement prevails. Within this context collective participation becomes difficult.

Despite this, the difference between those who become politicized versus depoliticized is narrow. This is due to the unique nature of their depoliticization. It is not that immigrants are not aware of the issues facing them and extensive education is needed. Nor is the fear of participating so crippling that immigrants are paralyzed against it. Depoliticization is about the removal of hope and the isolation of individuals from community or support. Because consciousness and collective desires continue to exist in spite of an extreme socio-political context with few resources, there are real possibilities of transcending this gap.

Although I maintain the development of community and politicization is a non-linear process with various possibilities, I also contend there are strategies which if implemented can potentially serve as catalysts. In the absence of a national or state immigrant integration policy, as in Canada (Bloemraad 2006), I suggest community organizations focused on immigrant rights implement programs aimed at aiding transitions into life in the US. Not explicitly political, the program would also incorporate established community building strategies such as community gardens, soccer leagues and cultural events (Hondagneu-Sotelo 2010).

Efforts should be taken to provide immigrants information about worker and immigrant rights. Language training, computer skills, filling out applications, as well as workshops regarding worker and immigrant rights are just some examples of the resources organizations could provide. With this training, immigrants could develop the understanding necessary to live and participate with confidence. As I identified earlier, one of the reasons active immigrants have been able to become involved is because they have gained the confidence and sufficient understanding of the American system. Training could instill both at an early stage in the transition to life in the US. I contend that providing immigrants with confidence and creating attachments with community members and community organizations would do a lot to mitigate the barriers preventing members of the Mexican community from taking their stated desires for unity from mere statements and desires to fruition and reality.

My research brings up many further questions that need addressing. Questions remain as to how gender influences politicization and how it compares to the community as a whole. Many have considered gender in looking at immigrant civic and political participation (see Hondagneu-Sotelo 2003). However, based on my findings, new issues arise as to how gendered expectations of behavior and civic skills affect the capacity to act politically. This is particularly important given the central role of community.

At the outset of my research I also sought to explore whether pre-migration experiences influence post-migration mobilization. Unable to discern the extent of influence, it has been left out of this article. If young adults with limited socialization in Mexico were found to lack collective desires, it might suggest a greater significance of pre-migration experiences for older immigrants. Likewise, the importance of unique pre-migration experiences would be accentuated if more respondents from urban Mexico were interviewed and found to have a shorter process to politicization than immigrants from rural Mexico. It would also lead to a more nuanced understanding of the strategies and resources needed for populations with differing cultural capital.
References


## Appendix

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<th>INTERVIEWEE</th>
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16
Direct v. Indirect Exposure to Trauma: An Insight to Officer Coping Mechanisms

Marybel Cortez: McNair Scholar
Jeremy D. Ball, J.D., Ph.D.: Mentor
Criminal Justice

Abstract

Police officers serve a vital role in our communities and face particularly acute trauma and stress in the execution of their jobs. Therefore, it is critical to fully understand how police officers react in these situations. Studies have shown that officers endure a distinctive source of stress and are presented with the risk of exposure to traumatic events. Chopko & Schwartz (2012) surveyed 183 officers and found that more than 30% displayed symptoms of PTSD; however, this study focused on direct exposure to trauma. The current study expands this previous research to study the effects of indirect experiences of trauma. For the purpose of this study, direct exposure to trauma is any first-hand involvement with trauma—for example, engaging in fire—and indirect exposure to trauma is a second-hand interaction—for example, hearing about an assault. The current study uses the Impact of Event Scale-Revised instrument developed by Morris et al. (2005) and used by Chopko & Schwartz (2012) to assess PTSD-related symptoms of police officers in stressful events. This study assesses symptoms of post-traumatic stress disorder as it relates to direct and indirect exposure to trauma, analyze officers' accessibility to employee assistance programs, and examine the officers' evaluation of these services.

Introduction

Because policing is a vital social control agency in our society, it is of the utmost importance to fully understand how its agents react to traumatic situations. Studies have shown that officers endure a distinctive source of stress and are often presented with risks of exposure to traumatic events (Colwell, Lyons, Bruce, Garner, & Miller, 2011). Officers are not able to control the situations with which they face, causing difficulty in attempting to recover from their trauma (Colwell et al., 2011). According to Davidson and Moss (2008), many officers suffer from Post-Traumatic Stress Disorder (PTSD), while others may fall into depression, abuse substances, and/or develop other anxiety disorders due to the stress of the job. Symptoms of PTSD that have been previously studied include flashbacks, nightmares, avoidance of recalling the trauma, memory loss of important aspects of the trauma, loss of interest in activities, insomnia, mood swings, and difficulty in concentration and focus (Chopko & Schwartz, 2012).

Police officer burnout typically derives from psychological stress and is far too common in a multitude of departments. Officers are exposed to numerous traumatic events, which may lead to emotional exhaustion. Hawkins (2001) concurred suggesting “as emotional resources are depleted, workers feel that they are no longer able to give of themselves at a psychological level.” (p. 343). Colwell et al. (2011) reports 35% of those who partake in a shooting retire or are reassigned to a non-patrol job within a year. Hawkins (2001) also found that 70% of those who are involved in an on-the-job fatality resign within seven years.

It is important to note that symptoms of PTSD and the ways individuals cope with “normal” trauma may overlap. In fact, Chopko and Schwartz (2012) indicated some officers will not even experience negative reactions to the traumatic event. In fact, some officers reported positive feelings after their experience. A female officer involved in a shooting stated she was very content, had passed her own test, and had a grin on her face after pulling the trigger. The female officer reported a feeling of accomplishment because she did what she was trained to do (Chopko & Schwartz, 2012).

Grasping the differences in coping mechanisms amongst officers is imperative. This information is essential to administrators of police departments, members of the community, and fellow police officers (Marshall, 2006). Administrators gain a better understanding of the different kinds of policies and procedures that need to be implemented to maintain an effective, organized system of handling traumatic events. Members of the community may provide resources outside of the department for officers to cope with their experience(s); thus, community
members reap advantages from this information. As citizens, we are more likely to develop a favorable opinion towards law enforcement if we know they are capable and fit for duty.

The purpose of this study is to compare coping mechanisms between officers who are directly involved in traumatic events and those who are indirectly exposed to traumatic events. This study also seeks to gain an understanding of what employee assistance programs are currently available, the percentage of officers who are aware of the available resources, and how effective the resources are given the officer’s participation in the services provided. This study concentrates on officer coping mechanisms and assesses how an officer handles traumatic events. It is important to note that this study focuses on symptoms of PTSD and not the diagnosis of PTSD in officers. Understanding PTSD and the potential symptoms of some officers involved in traumatic events will be beneficial information when evaluating current policies and procedures by which the targeted department abides.

**Literature review**

Protecting and serving the community is a typical mission adopted by many departments across the nation. Adopting and implementing this mission can lead to creating risk of exposure to critical events. For some officers, exposure to these events is inevitable and may lead to psychological distress. The research on officer psychological health is not new. Hawkins (2001) and Stinchcomb (2004) have studied what experiences may lead officers to develop psychological distress. Hawkins (2001) identified a correlation between officers’ psychological health and burnout rates using the MBI-HSS survey. The MBI-HSS examines three components of burnout syndrome defined by Maslach (1982). Stinchcomb (2004), focused on officers’ occupational stress using two models: the clinical-intervention model and the individual-coping model. The clinical-intervention model suggests that accessing psychological services prevents the onset of PTSD. The individual coping model emphasizes stress prevention. Both are designed to alleviate stress within the workplace. Stinchcomb (2004) found that both models have been evident in law enforcement practices. While they may provide temporary relief, the models do not address the source of the stress; therefore, Stinchcomb (2004) believes officers are never stress-free.

Though a number of studies have explored policing and trauma, the rate of officers who develop psychological disorders, such as PTSD, remains relatively constant across most studies. This consistent rate implies either that the current services for coping with trauma are either not successful or that these services have not been utilized by officers. This literature review addresses three components of officers’ experiences of trauma relevant to the current study: psychological distress, burnout, and coping strategies.

**Psychological distress**

When compared to other occupations, policing seems to be identified as a predominantly stressful one (Burke, 1994). High-speed pursuits, physical altercations, and shootouts are what the general public typically believes about a police officer’s day on the job. These types of events are referred to as episodic stressors as they are traumatic and can be encountered on any given day (Stinchcomb, 2004).

_The Diagnostic and Statistical Manual of Mental Disorders IV-TR_ (American Psychiatric Association [APA], 2000) defines trauma as

Direct personal experience of an event that involves actual or threatened death or serious injury, or other threat to one’s physical integrity; or witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate (Criterion A1). The person’s response to the event must involve intense fear, helplessness, or horror (or in children, the response must involve disorganized or agitated behavior) (Criterion A2). (p. 463)

Posttraumatic reactions encompass symptoms such as blocking reminders of the trauma (avoidance), replaying the experience (intrusion), and increased arousal (hyperarousal). Symptoms of PTSD have been detected in several active-duty officers. After surveying 183 police officers regarding self-perceived trauma, Chopko and Schwartz (2012) found that more than 30% of participants displayed symptoms of PTSD. Davidson and Moss (2008) found that the rates of officers who are diagnosed with PTSD vary greatly, ranging from 5-50% of officers. Davidson and Moss (2008) also note that some officers not only develop PTSD but also may suffer from depression, substance abuse, and other anxiety disorders. Additionally, Chopko and Schwartz (2012) report that many officers will not
experience negative reactions following their exposure and that the absence of distress is not abnormal. Field-
training officers should be aware of officers who do not experience substantial difficulties following the events and
should understand what is traumatizing for one particular officer may not be traumatizing to another (Chopko &
Schwartz, 2012).

As mentioned previously, the purpose of this study is to compare the direct (personal involvement in a
traumatic event) and indirect (witnessing a traumatic event) exposure to trauma amongst officers. Zimering,
Gulliver, Knight, Munroe, & Keane (2006) briefly studied direct and indirect trauma exposure to the experiences at
Ground Zero. The authors identified direct exposure as either experiencing or witnessing the event. Indirect
exposure was defined as becoming aware of severe news such as unexpected or violent death by a family member
(Zimering et al., 2006). Zimering et al. (2006) found that PTSD may be developed from indirect exposure to trauma.
The literature available on direct versus indirect exposure to trauma is scarce but, according to Zimering et al.
(2006), future research in this area is needed. More specifically, the authors advised to examine indirect exposure to
trauma and its relation to PTSD, expanding beyond research of PTSD symptoms of only direct exposure to trauma.

Police burnout and turnover

Burnout has been identified as a three-part syndrome consisting of: depersonalization, emotional
exhaustion, and reduction in personal accomplishments (Maslach, 1982). Depersonalized individuals are
disconnected, insensitive, and sometimes dehumanized. Emotional exhaustion is described as a situation in which
the person feels overwhelmed by the emotional demands of others. A person who constantly thinks negatively about
others and him/herself describes someone who is experiencing a feeling of reduced personal accomplishment
(Maslach, 1982).

Constantly fearing for and worrying about personal safety, the safety of others, and the concern of
performing to expectations of others are emotionally draining. Once an officer has reached emotional exhaustion
s/he can no longer give more of him/herself psychologically. This effect is what is referred to as burnout syndrome
(Hawkins, 2001). Maslach (2006) also reported that police officers that are experiencing burnout are more likely to
use violence against civilians, necessitating this vital area of research. Once an officer has experienced burnout,
resignation from the department can often follow which creates a significant turnover challenge. Turnover
negatively impacts a department because valued employees are lost and must be replaced and provides opportunities
for inconsistencies. The process of hiring someone new can be extremely costly and time consuming, especially in
terms of recruitment and training (United States Department of Labor, 2009).

It is important to note that most studies emphasize that a single traumatic event can act as a trigger for
PTSD, which leads to burnout. However, Marshall (2006) suggested that it is the repeated exposure to traumatic
events that leads to psychological distress. This phenomenon is referred to as Cumulative Career Traumatic Stress
(CCTS). Marshall (2006) distributed a questionnaire that measures the number of traumatic incidents to which an
officer is exposed since the beginning of one’s law enforcement career. This questionnaire consists of varying levels
of trauma. The highest level of trauma was whether an officer was confronted by a weapon. The second highest
level was an officer responding to a domestic violence call. The third highest level was an officer having to draw
his/her weapon. Symptoms of CCTS are similar to those of PTSD.

Though some officers leave the force following their exposure to a traumatic event, some researchers
believe it is the occupational stress that causes burnout. Stinchcomb (2004) suggested that police stress derives from
an accumulation of all the daily hassles of the job: a tough supervisor, a challenging disagreement with a coworker,
and/or micromanagement from administration. The author suggests that stress-related illnesses, as opposed to other
infectious diseases, are now the leading factors of death. American deaths are closely associated with degenerative
diseases—like heart disease—that some studies have shown are connected to stress. According to Colwell et al.
(2011), it is not the repeated exposure to traumatic events that stresses officers; rather, it is the combination of the
exposure to a traumatic event with the additional chronic everyday stress that leads to emotional exhaustion. Unless
the officer quits, s/he is not able to avoid future situations where similar trauma may occur (Colwell et al., 2011).

Maslach (2006) identified lack of control, insufficient rewards, work overload, breakdown in the
community, absence of fairness, and value conflicts within the organization as leading explanations for burnout. Other
potential explanations for police burnout and turnover are age and experience. Burke (1994) conveyed that
older police officers tend to report more sick days and officers with longer tenure report more psychosomatic
symptoms—poor appetite, headaches, chest pains, etc. Aging is a natural process, which cannot be controlled;
however, the psychological distress and/or occupational stress can be controlled if given the appropriate treatment.
Walsh, Taylor, and Hastings (2012) focused on educating officers about the risks of burnout and PTSD in their study. The authors believed that simply being aware of the symptoms of burnout and PTSD serve as a preventative measure. Therefore, raising awareness has become a goal to be integrated in Employee Assistance Programs. Another nontraditional tool that has been implemented to aid officers with psychological distress is the Trauma Risk Management (TRiM) risk assessment (Walsh et al., 2012). Members of the group complete rapid risk assessments with researcher’s hopes of identifying those in the group who are suffering from PTSD. The majority of participants of the TRiM workshops have reported positive comments (Walsh et al., 2012). Although the risk assessment has been tested primarily with military personnel, the author suggested that future studies assess the effectiveness of the tool within police forces (Walsh et al., 2012).

Coping strategies (Employee Assistance Programs)

The purpose of Employee Assistance Programs (EAPs) is to assist employees in coping with personal problems that might affect their job performance (United States Department of Labor, 2009). EAP services offered to individuals include: mental health services, drug and alcohol assistance, referrals to cope with personal issues like divorce, work-related services, and health and well-being services (United States Department of Labor, 2009). EAPs are beneficial for both the employee and the employer because the workplace environment is enhanced, employee health and productivity is improved, absenteeism is decreased, and the retention of valued employees is increased (Lawrence, Boxer, & Tarakeshwar, 2002).

Law enforcement officers are known for opposing mental health services because seeking help implies weakness (Miller, 1995). There is a perception that police officers are tough and are expected to remain strong no matter what they encounter while on the job (Miller, 1995). Additionally, seeking services for mental health is also perceived as an inability to do his/her job (Miller, 1995). Miller (1995) reported that an officer who seeks assistance is at risk of being stigmatized, ridiculed, and isolated by their coworkers. This potential ridicule from coworkers poses a challenge when attempting to identify officers who need support overcoming the stresses of the job.

In an effort to alleviate this problem, the Office of Disability Employment Policy (ODEP) conducted a study to evaluate EAPs. ODEP suggested that younger employees are more likely to seek help than older employees. Based on the findings, ODEP modified their integration of EAPs. Interactive assessments are now offered online, webinar and podcasts are available, and text messaging and emails are used to provide a coaching service rather than a clinical service.

Lawrence et al. (2002) found that actual utilization of EAP services was low. Employees’ distrust in the confidentiality of services provided, lack of support from the administration, low accessibility, and participants’ low satisfaction with the services were among some of the reasons for the lower utilization rates among law enforcement officers. Lawrence et al. (2002) also note that the most often requested services were individual and family counseling. The author reported that the majority of participants were aware of EAP services, which lowers the likelihood that “unawareness” is a reason for low utilization. Nontraditional EAP services, such as seminars and workshops, acquired strong interest from participating officers. Sample topics for the workshops include career trajectory, stress management, crisis interventions, and organized support groups.

Social support, which is also referred to as social capital, has also been examined as a form of coping with the stress of policing. Martin, Savage, & Torgler (2010) take a sociological approach to examine officers who display PTSD symptoms. The social capital in this study referred to the amount of support (e.g. family, friends, and physical activities) an officer has in order to cope with his/her situation. The study concurs with previous research indicating that officers who have more social capital are less likely to develop symptoms of PTSD, abuse substances, engage in violent behavior, and perform poorly in their job (Patterson, 2003).

Gächter, Savage, & Torgler (2010) proposed that social capital can reduce short- and long-term health consequences amongst police officers. Gächter et al. (2010) conceptualized social capital as the relationship and trust police officers preserve. Using a multivariate regression analysis, which centralized on three different proxies of health and three different proxies for social capital, Gächter et al. (2010) found that increased levels of social capital is highly correlated with better health outcomes. They also found that merely offering counseling services to relieve stresses from the job was viewed as too simplistic, as the relationship between individual demographics, stressful incidents, and organizational structure is complicated (Gächter et al., 2010). In order to reduce stress, the authors recommended that police agencies implement programs that are designed to enhance trust and cooperation throughout the organization. Social capital paired with health improvement programs are a better alternative to the traditional counseling services offered by most police departments (Gächter et al., 2010).
As previously mentioned, the literature on direct versus indirect exposure to trauma is limited. This study explores the potentially different PTSD symptoms generated from direct exposure to trauma compared to indirect exposure. Evaluations of EAPs have been conducted, and various authors suggest that counseling, debriefings, and social support programs need to be implemented for more effective coping mechanisms (Lawrence et al., 2002; Miller, 1995; Robinson, 2003). Personalizing EAPs to individual departments has also been offered as a solution. However, the efficacy of these suggestions has not been closely examined. Therefore, it is relevant to analyze officer coping mechanisms. More specifically, understanding the differences in coping mechanisms amongst officers who are directly/indirectly exposed to trauma will add to current research growth in this area.

**Methodology**

Since no previous research examined the potentially differential effects in the manifestation of PTSD symptoms in officers who experience direct versus indirect exposure to trauma, this study is exploratory in nature and does not posit any particular hypotheses other than there might be a difference in existence and/or levels of PTSD symptoms between those who experience trauma directly compared to those who experience trauma indirectly. In comparing coping mechanisms amongst officers who were directly and indirectly exposed to trauma, the current study defines exposure to trauma in two important ways. First, *direct* exposure is identified as any first-hand involvement with a traumatic event (e.g. physical assault, exchange of fire, and on-the-job injuries). Second, *indirect* exposure is classified as a second-hand interaction (e.g. witnessing shots being fired, hearing about a traumatic event, and hearing about sexual violence against children).

Three research questions are established. The first research question addresses how officers with direct exposure differ in the manifestation of PTSD symptoms compared to those officers with indirect exposure. The second research question addresses the likelihood of officers with direct exposure to utilize department coping services compared to those officers with indirect exposure. The third research question addresses the differential evaluation of the effectiveness of these services between officers with direct exposure to trauma and officers with indirect exposure to trauma.

**Procedure**

This study uses a posttest only comparison group design to explore the questions generated. This design only considers those officers who have experienced a traumatic event; next, officers are placed in one of two groups—direct exposure and indirect exposure. Both quantitative and qualitative methods are used to analyze the data gathered. The current study assesses the impact a traumatic event has on the officers and to evaluate whether there are services available, whether the officers access those services, and their evaluation of the effectiveness of those services.

A survey was distributed electronically via Qualtrics, ensuring the confidentiality of each participant. The instrument to assess subjective distress to traumatic events is generated from the Impact of Events Scale-Revised (IES-R) designed by Daniel Weiss and Charles Marmar (1997). The IES-R is a self-report survey comprised of 22 statements, and each statement is scored using a Likert-type scale (Not at all = 0, A little bit = 1, Moderately = 2, Quite a bit = 3, and Extremely = 4). An alpha check was run on the IES-R (α=0.940), indicating that the scale is internally consistent.

The statements are pertinent to the officer’s exposure to trauma and cover how the officer feels about his/her event, what reactions the officer experienced, and how the experience impacted his/her job. A complete list of items is listed in Table 1.

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1 The current study was granted use of this questionnaire from Weiss and Marmar (1997) on March 2013.
Table 1. Complete list of IES-R statements

<table>
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<tr>
<th>Intrusion</th>
<th>Avoidance</th>
<th>Hyperarousal</th>
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<tr>
<td>Any reminder brought back feelings about it.</td>
<td>I avoided letting myself get upset when I thought about it or was reminded of it.</td>
<td>I felt irritable and angry.</td>
</tr>
<tr>
<td>I had trouble staying asleep.</td>
<td>I felt as if it hadn't happened or wasn't real.</td>
<td>I was jumpy and easily startled.</td>
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<tr>
<td>Other things kept making me think about it.</td>
<td>I stayed away from reminders of it.</td>
<td>I had trouble falling asleep.</td>
</tr>
<tr>
<td>I thought about it when I didn't mean to.</td>
<td>I tried not to think about it.</td>
<td>I had trouble concentrating.</td>
</tr>
<tr>
<td>Pictures about it popped into my mind.</td>
<td>I was aware that I still had a lot of feelings about it, but I didn't deal with them.</td>
<td>Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.</td>
</tr>
<tr>
<td>I found myself acting or feeling like I was back at that time.</td>
<td>My feelings about it were kind of numb.</td>
<td>I felt watchful and on-guard.</td>
</tr>
<tr>
<td>I had waves of strong feelings about it.</td>
<td>I tried to remove it from my memory.</td>
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</tr>
<tr>
<td>I had dreams about it.</td>
<td>I tried not to talk about it.</td>
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Variables

Given the three main research questions, there are three separate dependent variables. The first dependent variable is the PTSD symptoms of the police officer after the experienced trauma. The IES-R is scored and analyzed to measure the dependent variable. One can break down this scale into three important categories of concern: no concern (< 24), clinical concern (24-32), and probable PTSD (>32)². The dependent variable can also be separated into three IES-R subscale scores: intrusion, avoidance, and hyperarousal (see categories of statements in Table 1). The intrusion subscale score is composed of 8 statements, the avoidance subscale score consists of 8 statements, and the hyperarousal subscale score is comprised of 6 statements. Each subscale score ranges from 0-4. Interpretations of each subscale score indicate to what extent a particular cluster of symptoms of PTSD has distressed the individual. For example, if a participant scores a mean of 2.3 on the hyperarousal subscale, this would indicate that for the past 7 days, this individual was moderately distressed by hyperarousal symptoms.

The second dependent variable is whether the officer utilized services or not—a dichotomous term collected from the self-reported question in the questionnaire. The third dependent variable is the effectiveness of services. The effectiveness of services data are collected from the questionnaire question asking “How would you rate the quality of the services offered?” The potential responses to this question were: Very Poor = 1, Poor = 2, Good = 3, Very Good = 4, or Excellent = 5.

The main independent variable examined in the current study is the type of exposure to trauma—direct or indirect. This variable is generated from the self-report measure inquiring about the respondent’s most traumatic event in the last three years. The narrative is coded in three important ways: no exposure, direct exposure, and indirect exposure. Other important independent variables that could lead to potentially differential distress responses are the officer’s level of experience in the field (measured in years) and rank. Other demographic variables such as gender, age, and education were also included. An important variable in analyzing the potential effects on access and effectiveness of services provided is whether officers are aware of employee assistance programs.

Sampling and data analyses

The questionnaire was distributed electronically to a number of law enforcement officers at four agencies in a western state – including city, county and state. After IRB approval and agency leadership approval, the survey was sent to all of the officers in each of the four agencies, and the comparison and test groups were identified based on the narrative responses regarding their exposure to a traumatic event in the last three years. The collection period lasted 3 weeks in the summer of 2013.

Upon collecting the surveys, the current study used multiple techniques to analyze the data. First, descriptive statistics provided an overall picture of the data gathered. Second, bivariate analyses were explored ranging from chi-square analyses (for categorical variables) to t-test analyses (continuous dependent variable with a dichotomous independent variable). Although multivariate analyses are preferred to control for potentially extraneous variables in examining the relationship between the target independent variable (e.g., type of exposure) and the dependent variable (e.g., PTSD symptoms), this type of analysis was not appropriate for two reasons: first, this study was exploratory in nature, and second, the sample size was not large enough to secure confidence in the findings it generated. Data were initially screened for missing values.

Results

Table 2 outlines only officers exposed to a traumatic event in the last three years. Of these officers exposed to trauma in the last three years, 46% were directly exposed and 54% were indirectly exposed. The majority of the sample includes white (93%) male (93%) officers from a county agency (44%) between the ages of 35 and 44 (58%). The majority of participants were at a rank of officer (68%), with some college level education (49%). The highest representation of officers (49%) had 4-10 years of service.

<table>
<thead>
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Of the respondents who were exposed (directly or indirectly) to a traumatic event in the last three years, the average total IES-R score was 18.95 (median = 15.50). As previously stated, subscale scores range from 0-4 and indicate the level of distress, in the last 7 days, related to each cluster of symptoms. The avoidance mean was 0.77 (not at all distressed), the hyperarousal mean was 0.65 (not at all distressed), and the intrusion mean was 1.11 (a little bit distressed). For the entire sample of officers exposed to trauma, only 6% of participants indicated PTSD symptoms of clinical concern and 21% of participants indicated probable PTSD.

Approximately 61% of those exposed to a traumatic event in the last three years accessed services to assist in their coping of such trauma. Of those who accessed services, only 5.6% of officers indicated that the services were not satisfactory (e.g. very poor/poor).

PTSD Symptoms

To analyze the relationship between type of exposure and average total score on the IES-R scale, the current study uses an independent samples t-test (see Table 3). The t-test ($t = -1.546$, $p > .10$) suggests a statistically insignificant finding—that is, there is no relationship between type of exposure and total IES-R score.

Comparing direct exposure to indirect exposure and its effect on the PTSD symptoms experienced, independent t-tests were run on three separate clusters of symptoms of PTSD: avoidance, intrusion, and hyperarousal. The t-test analyzing the avoidance cluster among directly and indirectly exposed participants revealed a statistically significant difference ($t = -2.750$, $p < .10$), suggesting that participants who are indirectly exposed to a traumatic event will experience higher levels of avoiding the trauma (see Table 4).
Table 4. Bivariate analysis of exposure type and IES-R Avoidance (Independent samples t-test)

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>t</th>
<th>df</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.752</td>
<td>-2.750</td>
<td>139.448</td>
<td>Direct 0.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Indirect 0.93</td>
</tr>
</tbody>
</table>

*p<.10

The two remaining clusters of symptoms of PTSD—hyperarousal and intrusion—were also analyzed in comparison to exposure type using an independent samples t-test (see Table 5 and Table 6). The t-tests were not statistically significant, indicating that participants who were either directly or indirectly exposed experienced similar levels of hyperarousal ($t = -0.854$, $p > .10$) and intrusion ($t = -0.655$, $p > .10$).

Table 5. Bivariate analysis of exposure type and IES-R Hyperarousal (Independent samples t-test)

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>t</th>
<th>df</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.146</td>
<td>-0.854</td>
<td>138.960</td>
<td>Direct 0.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Indirect 0.70</td>
</tr>
</tbody>
</table>

*p<.10

Table 6. Bivariate analysis of exposure type and IES-R Intrusion (Independent samples t-test)

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>t</th>
<th>df</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.23</td>
<td>-0.655</td>
<td>136.435</td>
<td>Direct 1.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Indirect 1.15</td>
</tr>
</tbody>
</table>

*p<.10

Demographic factors such as age, gender, education, race, years of service, rank, participation in services, and awareness of services did not vary by type of exposure to trauma.

Accessing Services and Evaluation of Services

When surveyed about familiarity with departmental services (see Table 7), type of exposure did not vary significantly among the sample ($\chi^2 = 0.024$, $p > .10$). When questioned about participation in EAPs, exposure type had no statistically significant influence on one’s participation in services ($\chi^2 = 2.085$, $p > .10$).

Table 7. Results of Chi-Square on exposure type and awareness of services

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>61 (95%)</td>
<td>3 (5%)</td>
</tr>
<tr>
<td>Indirect</td>
<td>72 (95%)</td>
<td>4 (5%)</td>
</tr>
</tbody>
</table>

$\chi^2 = 0.024$

*p<.10

Table 8. Results of Chi-Square on exposure type and participation in services

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>44 (68%)</td>
<td>21 (32%)</td>
</tr>
<tr>
<td>Indirect</td>
<td>43 (56%)</td>
<td>34 (44%)</td>
</tr>
</tbody>
</table>

$\chi^2 = 2.085$

*p<.10

Exposure type did not influence the officers’ opinions regarding the effectiveness of services ($\chi^2 = 2.085$, $p > .10$). See Table 9.
Table 9. Results of Chi-Square on exposure type and evaluation of services

<table>
<thead>
<tr>
<th></th>
<th>Very Poor</th>
<th>Poor</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>1 (2%)</td>
<td>4 (7%)</td>
<td>27 (48%)</td>
<td>14 (25%)</td>
<td>10 (18%)</td>
</tr>
<tr>
<td>Indirect</td>
<td>1 (2%)</td>
<td>2 (4%)</td>
<td>24 (43%)</td>
<td>20 (36%)</td>
<td>9 (16%)</td>
</tr>
</tbody>
</table>

$\chi^2 = 1.955$

*p < .10

Discussion

Previous research regarding the study of PTSD symptoms of officers who experience trauma indicate that not all officers will develop PTSD (Chopko & Schwartz, 2012). However, the majority of officers will experience symptoms of CCTS. The ongoing, “ordinary” stressors of police work—such as shift hours and occupational stress—can lead to burnout and turnover (Marshall, 2006). According to ODEP, younger, rather than older, employees are more willing to seek help to resolve their personal problems (United States Department of Labor, 2009). Gächter et al. (2010) suggest departments implement programs that enhance trust and cooperation to build officers’ social capital. These scholars sustain that an increased social capital reduces the short and long-term health effects of stress.

Though the results suggest that type of exposure does not have a significant differential effect on one’s manifestation of PTSD symptoms, there may be a hidden relationship. The results of this study seem to be consistent with that of Chopko and Schwartz (2012). About 21% of officers displayed symptoms of probable PTSD. The results of the current study did not find that exposure type differentially influenced officers’ willingness to participate in departmental services.

Limitations of the study

Psychological health, PTSD, and stress are delicate topics that most individuals do not share openly. Therefore, the primary obstacle this study faces is experimental mortality; incomplete surveys were not included in data analysis. Additionally, there might be respondents who are not entirely truthful, which might provide a threat to internal validity. A significant reduction in sample size would also be a major threat to the internal validity of this study. However, distributing the survey to multiple agencies did increase the base number of returned surveys to yield an appropriate sample size and the results indicate that different agencies (city, county, and state) did not yield differential results based on type of agency. Even though the sample sizes might be too small for multivariate analyses due to list-wise deletion, this sample is large enough to allow for the use of inferential statistics and formulate conclusions about the population in question.

Information regarding whether or not exposure type influences an officer’s participation in departmental services was not collected. The partnering agencies did not share any records of who attends services and/or why an officer participates. Therefore, it may be possible that officers who are indirectly involved with traumatic events are not receiving the services needed to cope with trauma.

The demographic makeup of the region poses a threat to external validity, as the majority of participants were White males in a non-urban area. “Stress” for officers of color in an urban area may not have the same impact on a White male in a non-urban area.

Future Research

Further research in this area should address whether or not exposure type influences an officer’s participation in departmental services. Current policies should be examined and tested for efficiency— for example, are the current policies and practices for providing services addressing appropriate resources to help officers cope adequately? Future research should analyze whether officers who are required to attend services differ from officers who voluntarily seek services. An assessment of the length of services utilized would be beneficial information in determining how long is “long enough” before an officer is declared “fit for duty” after an incident. Finally, services offered should be adaptive of the officer’s exposure type.
Acknowledgements

The author wishes to express her appreciation to Dr. Jeremy Ball, the partnering agencies, the participants of this study, the McNair Scholars Program, and her loved ones for supporting this research.
References


Recollection of Middle and High School Years: The Effect of Parental Involvement on College Students’ Motivation

Ericka Hill: McNair Scholar
Dr. Jennifer Weaver: Mentor
Psychology

Abstract

Empirical studies suggest a link between parental involvement and their child’s motivation in elementary, middle and high school. Considering the large body of research on this topic in younger age groups, my project focuses on whether parental factors still influence students’ academic motivation in college. Students from various majors, attending a university in the northwestern region of the United States, completed a questionnaire concerning their parents’ level of involvement during their middle and high school years, as well as during their college education. The questionnaire consisted of multiple scales focusing on the student’s perceptions of their academic competence and their perceptions of their autonomy within academia. Students were also asked about their perceptions of their parents’ attitudes toward their present and future educational achievements and reasoning for attending college. Contrary to other studies, intrinsic motivation was not related to encouragement however, was related to perception of intelligence. Surprisingly, both encouragement and perceptions of intelligence was related to extrinsic motivation. Both intrinsic motivation and extrinsic motivation were related to high perceptions of autonomy and perceived competence.

Introduction

At all educational levels, motivation is recognized as an important component in predicting students’ academic achievement and persistence through academics (Casillas, et. al., 2012; Mitchell, 2012). However, TeWang and Eccles (2012) study shows a decrease in students’ motivation to learn as they enter middle and high school years.

A theory that focuses on three different forms of motivation and examines how the context can promote or thwart the different forms is the self-determination theory (Ryan & Deci, 2000a). The main distinction in SDT is the difference between autonomous behavior and controlled behavior. Under these two behaviors lies a continuum varying in intrinsic motivation, doing an activity for self-pleasure (Mitchell, 2012), extrinsic motivation, doing an activity due to external reasons (Mitchell, 2012), and amotivation, lacking motivation for the activity overall (Mitchell, 2012). According to SDT, the motivational style is influenced by the factors in the environment that affects the individual’s self-perception of their competence and autonomy (Ryan & Deci, 2000b; Mitchell, 2012). An environment that provides support for the development of competence and autonomy is fundamental in enhancing intrinsic motivation within an individual. Grolnick, Deci, and Ryan (1997) reported that parents who support their children’s autonomy have children who are more intrinsically motivated. Furthermore, when students believe their parents value effort and academic success they have a higher perceived academic competence (Gonzalez-DeHass et al., 2005).

Many educational professionals have examined social and cultural factors that influence students’ motivation to learn and achieve in school (Lepper, Corpus, & Iyengar, 2005; Pomerantz & Dong, 2006; Kinlaw & Kurtz-Costes, 2007; Yamamoto & Holloway, 2010). These studies have observed that students can be influenced to do an activity related to their education in a variety of ways, including external rewards (grades, money, etc.) and verbal rewards (encouragements, praise, threats, etc.). While teachers, peers, and parents all have an impact on the students’ motivation to learn (Wentzel, 1998), scholars have been interested in examining how the involvement of parents impact children’s motivation in school. In a study conducted by Ames et al. (1993) students’ intrinsic motivation was more positive when children witnessed their parents’ involvement in their education.

Parental involvement has been studied in both the school environment and home environment. The measures examining parental involvement in the school has differed across studies and has included such aspects as the amount of time parents volunteer in schools (Okpala et al., 2001) and attending open-houses or being a part of
parent school board organizations (Gonzalez-DeHass et al., 2005). Measures examining parental involvement in the home environment has also differed across studies, including, parent-child communication regarding educational issues (Keith et al., 1986; Yamamoto & Holloway, 2010) and parents doing school-related activities in the home (Shumow & Miller, 2001). After examining the effects of parental involvement in and out of the educational environment, it was concluded that parental involvement in school and out of school may be related to student motivation differently (Marchant et al., 2001; Shumow & Miller, 2001; Shernoff and Schmidt, 2008). In fact, most recently Robinson & Harris (2014) noted that the involvement that is rarely seen by teachers and other professional staff is related to having a greater impact on the child’s educational achievement and motivation in school in comparison to physical involvement in the educational setting. Shumow and Miller (2001) found the same results when examining the differences in the effects of both school-involvement and home-involvement.

While examining both types of parental involvement would be beneficial, the present study focuses on the effects of parental involvement outside of the school environment; the involvement that is not observable by teachers and other educational professionals (Goldstein, 2014). The study of parental involvement outside of school has varied widely, from how parents assist with homework (Ginberg & Bronstein, 1993) to parent-child communication of educational values and beliefs (Gonzalez-DeHass, 20005). The present study focuses on how parents communicate educational values with their children during adolescence through emerging adulthood.

Parental involvement in the home environment has been found to affect students’ achievement-related beliefs, including their perceived competence and aspirations regarding academic achievement (Grolnick & Slowiazeck, 1994). Steinberg and colleagues (1992) state that involvement is even more beneficial when it allows for a degree of autonomy on the part of the child. By encouraging their children to grow their knowledge base and supporting independent learning, parents can help facilitate their child’s desire to learn new values and beliefs, assimilate them, and in turn achieve higher motivation in school. Gaining children’s interest to learn in early childhood, with the support of parental involvement in the home environment can help increase the intrinsic motivation and/or the internalization of values in students. This, in turn, may help develop and broaden the academic aspirations of students and perhaps increase their desire to earn a college degree.

The purpose of the present study was to examine the parental factors that influence college students’ academic motivation. In this study, the definition of parental involvement includes parent’s perception of their child’s intelligence and parental encouragement of school-related activities. Students were asked to recall their parents’ involvement or lack of involvement in their middle school years, their high school years, and their college years. While SDT consists of three motivational styles, this study only focuses on the intrinsic and extrinsic motivational orientations. In order to assess the students’ intrinsic or extrinsic motivation they were asked to complete a questionnaire regarding their reasons for attending college. Since having a sense of autonomy and perceiving oneself as competent is associated with increasing both intrinsic motivation and extrinsic motivation, two scales were also used to examine the students’ sense of autonomy and competence in regards to education. Considering the large body of research examining parental involvement in their child’s education, this study hypothesizes that (a) high levels of parental involvement (encouragement and perceptions of intelligence) will be positively associated with intrinsic motivation and not associated with extrinsic motivation and (b) the association between intrinsic motivation, autonomy and perceived competence will be stronger than the observed association between extrinsic motivation, autonomy and perceived competence.

Method

Participants

Five hundred and seven college students enrolled in a college course at Boise State University, participated in this survey. The ages ranged between 17 and 53 years old. Approximately 60.7% were freshman, 22.4% sophomores, 12.8% juniors, 3.3% seniors, and .8% of another college classification. The sample was 83% White/Caucasian, 8.2% Hispanic/Latino, 3.7% Asian American/Pacific Islander, 3.1% other or mixed ethnicity, 1.4% African American, and .6% Native American/Alaska Native. A minority of the students were psychology majors 11.8%. Participants were treated in accord with APA ethical guidelines (American Psychological Association, 2010).
Measures

Academic Motivation Scale. The Academic Motivation Scale (Vallerand, Blais, & Briere, 1989) consists of 28 items, each rated on a 7-point scale, 1=Does not correspond at all to 7=Corresponds exactly, with 3 subgroups examining intrinsic (e.g. “I go to college because with because I experience pleasure and satisfaction while learning new things”), and extrinsic (e.g. “I go to college because with only a high-school degree I would not find a high-paying job later on”). To calculate an individual score on AMS, the mean of each individual subscales are computed. A high score on either subscale indicates high levels for that type of motivation.

Perceived autonomy in various life domains scale. The Perceived Autonomy in Various Life Domains Scale (Blais & Vallerand, 1991) consist of 16 items, each rated on a 7-point scale, 1=Do not agree to 7=Strongly agree, with half being reverse scored. The scale focuses on four life domains; leisure, interpersonal relationships, academia, and life in general. For the purpose of this study, the researcher only used four items from the entire scale. Since the focus of this study is to examine the effects on school motivation all of the other domains are not applicable. The items used in this study addressed the students’ perceived autonomy within the academic domain. Example items include: “I go to school out of personal choice,” ”I have to push myself (or be pushed by someone) in order to go to school,” “At school, I feel as if I were in jail,” and “I feel obligated to go to school.” Of the four items, three needed to be reverse scored. To find the total score, the mean for the academia scale was computed, with a high score exhibiting a feeling of autonomy and control in the educational domain.

Perception of competence in various life domains scale. The Perception of Competence in Various Life Domains Scale (Losier, Vallerand, & Blais, 1993) consist of 16 items, each rated on a 7-point scale, 1=Not at all agree to 7=Very strongly agree, with 4 subgroups focusing on an individuals perceived competence within the domains of life in general, academia, interpersonal relationships, and leisurely activities. As with the perceived autonomy scale above, the researcher used four items from the perception of competence scale, due to the other items being non-applicable to this study. The four items used focused on the students’ perceived competence within the academic domain. Example items include: “I have developed very good abilities as a student,” “In general, I have difficulty doing my school work well,” “I do not believe I am a very efficient student,” and “Overall, I believe I am a good student.” Two of the four items within this domain were reverse scored. To find the total score, the mean for the academia scale was computed, with a high score exhibiting higher feelings of efficacy and competence in the educational domain.

Parental attitudes toward education and achievement. In order to examine past parental involvement, students completed twenty-four items concerning both maternal and paternal involvement in middle school, high school, and college. The items questioned the perceptions they have regarding their parents’ attitude toward their present and future educational achievements and intelligence. When placing these items in a factor analysis, two factors resulted: encouragement (i.e. “How often did your mother/father encourage you to do better in middle school?”), and perceptions of intelligence (i.e. “My mother/father stressed intelligence in school”). The factor loadings, encouragement and perceptions of intelligence, can be seen in Tables 2 and 3.

Procedures

The participants in the study were enrolled in an undergraduate psychology course. These participants completed the survey on their own time, via an online survey, with a completion estimated to be about 30 minutes. The survey was composed of a variety of scales, multiple items formulated and analyzed by the researcher, as well as various demographic items.

Results

The main variables in this study consisted of parental involvement and motivation. The independent variable, parental involvement, includes parental perception of the child’s intelligence as well as encouraging intelligence and performance in school. The dependent variables are intrinsic motivation and extrinsic motivation.
An alpha level of .05 was used for all statistical testing in this study. While 507 students signed up to participate in this study, about 97% fully completed the survey. The descriptive statistics can be seen in Table 1.

High levels of parental involvement (encouragement) was not associated with intrinsic motivation in college \( r(491)=.07, p=.134 \). However, high levels of parental involvement (perception of intelligence) was associated with intrinsic motivation in college \( r(493)=.12, p=.008 \). Contrary to the original hypothesis, parental involvement (encouragement and perceptions of intelligence) was associated with extrinsic motivation in college \( r(491)=.21, p<.001 \) and \( r(493)=.33, p<.001 \).

Secondly, it was hypothesized that the association between intrinsic motivation, autonomy, and perceived competence will be stronger than the observed association between extrinsic motivation, autonomy, and competence. Correlation tests indicated that intrinsic motivation and autonomy were positively correlated, \( r(489)=.27, p<.01 \) as was the correlation between intrinsic motivation and competence, \( r(490)=.28, p<.01 \). Extrinsic motivation was also positively associated with autonomy, \( r(489)=.12, p=.007 \) and perceived competence, \( r(490)=.24, p<.01 \). A z-test indicated that the association between intrinsic motivation and autonomy was stronger than the association between extrinsic motivation and autonomy (\( z=2.44, p=.01 \)). However, the association between intrinsic motivation and perceived competence was no stronger than the association between extrinsic motivation and perceived competence (\( z=.67, p=.50 \)).

Discussion

The purpose of this study was to examine whether parental factors influence students’ academic motivation in college. As identified in previous studies, the type of parental involvement is important to define when examining its effect on student motivation and achievement in school. Different types of involvement can impact the child in different ways.

The first hypothesis predicted that high levels of parental involvement (encouragement and perceptions of intelligence) will associate with intrinsic motivation and will not associate with extrinsic motivation. This statement proves to be half true. Surprisingly intrinsic motivation was only linked to perception of intelligence and not to encouragement. On the other hand both types of parental involvement linked to extrinsic motivation in school.

Parental involvement can be seen in the school and home environment and according to previous research the distinction between the two can predict different motivational outcomes (Shumow & Miller, 2001; Gonzalez-DeHass et al., 2005; Goldstein, 2014). For example, in Shumow and Miller’s (2001) study parental involvement within the home environment was related to the child’s motivational orientation while the child’s motivational orientation was not related to parental involvement in the school environment. Interestingly, Ginsburg and Bronstein (1993) found that when parents monitored, enforced, and helped with homework the students were more extrinsically motivated. While this example of parental involvement seems to negatively affect students, other forms of parental involvement can affect student’s motivation positively. In fact, Gonzalez-DeHass and colleagues (2005), mention that the physical displays of parental involvement in the educational settings might not be the type of involvement educational professionals should be focusing on. Instead, educational professionals should focus on the involvement that is not directly viewed by the teacher, but instead takes place in the home (Goldstein, 2014).

The second hypothesis tested, found that intrinsically motivated students displayed higher levels of autonomy and perceived competence compared to extrinsically motivated students.

Students’ level of intrinsic motivation was associated with greater perceptions of intelligence but not associated with encouragement. Consistent with previous research, intrinsic motivation was linked to autonomy and perceived competence. Parents who were more involvement in their child’s education resulted in their children being intrinsically motivated in the academic domain (Ames et al., 1993; Ryan & Deci, 2000a; Gonzalez-DeHass et al., 2005). As mentioned earlier, intrinsic motivation increases in an individual when autonomy and competence, are supported and promoted by the environment (Deci & Ryan 2008). To fully enjoy an activity an individual must have the freedom to do the task (autonomy) and feel they have the ability to accomplish the task (competence). In a study done by Fan, Williams, & Wolters, (2012) parents who held higher academic aspirations had children who were more intrinsically motivated in school. Grolnick et al. (1991) reported that when parents were involved, the students were more likely to recognize who controls their educational outcomes, have better feelings about their educational abilities, and display more autonomous behaviors. Having a supportive environment allows the student to feel comfortable and capable of achieving the task (Stiller & Ryan, 1992; Steinberg et al., 1992).

The interesting results indicating that students with extrinsic motivation in college relating to autonomy and perceived competence in the academic domain could be justified by examining “the extent to which the regulation to perform the activity is autonomous” (Ryan & Deci, 2000a). According to SDT, extrinsic motivation is on a
continuum, having four different regulations influencing the individual to perform an activity. The four regulations include; integrated regulation (i.e. regulations that are evaluated and assimilated with other personal values), identification regulation (i.e. conscious, personal acceptance of a value), introjected regulation (i.e. intrapersonally controlled, taking in value but not fully accepting it), and external regulation (i.e. interpersonally controlled, participating in an activity to satisfy external reasons) (Deci & Ryan, 2000; Ryan & Deci, 2000a). Parents’ who support their child’s autonomy by allowing their child to transform and internalize the values into their own, results in an increase in students autonomous behavior (Ryan & Deci, 2000a; Grolnick & Ryan, 1989) and an increase in the students’ perceived academic competence (Ames et al., 1993; Marchant et al., 2001; Gonzalez-DeHass, 2005; NICHD, 2008). When students perceive their parents’ value academic success, students have a higher perceived competence and set their priorities higher for their ability, effort, and grades in school (Gonzalez-DeHass et al., 2005).

As with every study, it is important to consider the limitations and shortcomings. First the present study was examined from one perspective, the students. It is important for the reader to understand that the results reflect college students’ perceptions of involvement rather than parental perceptions of involvement. Acquiring data from only one perspective may result in inaccurate information (Ashcraft, 2012, pg. ). Gathering information from other sources of data such as parents, teachers, and other relevant individuals would help strengthen the significance of the results.

Second, since parental involvement in the home environment was the only type of involvement examined in this study, it is important to note that there are other ways parents can become involved in their child’s education (e.g. volunteering in the schools, being a part of the parent teacher organization, and attending open house). While this study focused on encouragement and perception of intelligence, investigating other types of school involvement would benefit future research. However, considering Robinson and Harris’ new findings, Goldstein (2014) notes a focus on the involvement outside the school setting might be the best way to understand the effects of parental involvement on student achievement and motivation in school.

Lastly, considering the demographics of this sample, being 83% white, another study conducted with a more diverse population may change the significance of this present study. Stevens (2006) states that even though Hispanic students fail to perform better than their white classmates, they still have higher intrinsic motivation in school compared to their white peers. Examining the differences and similarities between parental involvement and the students’ educational outcomes is important information for educational professionals to know.

In conclusion, students who exhibited intrinsic motivation did not associate with high levels of encouragement but was associated with high levels of perception of intelligence. As hypothesized intrinsic motivation associated with students having a sense of autonomy and perceived competence. Contrary to the hypothesis, extrinsic motivation was related to both encouragement and perception of intelligence. These findings suggest that the type of involvement examined does in fact affect the students’ motivation in school differently.
References


34


## Appendix

Table 1. Descriptive statistics for parental involvement effects on motivation data survey (N=507)

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>%</th>
<th>M(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic Motivation Scale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>493</td>
<td></td>
<td>4.37(1.29)</td>
</tr>
<tr>
<td>Extrinsic motivation</td>
<td>494</td>
<td></td>
<td>5.76(.96)</td>
</tr>
<tr>
<td><strong>Perceived Autonomy Scale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perception of Competence</td>
<td>489</td>
<td></td>
<td>4.80(.92)</td>
</tr>
<tr>
<td><strong>Parental Attitudes toward Education and Achievement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouragement</td>
<td>494</td>
<td></td>
<td>4.74(1.03)</td>
</tr>
<tr>
<td>Perception of intelligence</td>
<td>496</td>
<td></td>
<td>4.95(.80)</td>
</tr>
</tbody>
</table>
Table 2. Items and factor loadings for maternal attitudes toward education and achievement

<table>
<thead>
<tr>
<th>Loadings</th>
<th>Factor 1: encouragement</th>
<th>Factor 2: perception of intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often did your mother encourage you to do better in middle school?</td>
<td>.849</td>
<td>.182</td>
</tr>
<tr>
<td>How often did your mother encourage you to do better in high school?</td>
<td>.880</td>
<td>.201</td>
</tr>
<tr>
<td>How often does your mother encourage you to do better in college?</td>
<td>.788</td>
<td>.212</td>
</tr>
<tr>
<td>My mother encouraged me to do better in my school work in middle school.</td>
<td>.834</td>
<td>.240</td>
</tr>
<tr>
<td>My mother encouraged me to do better in my school work in high school.</td>
<td>.877</td>
<td>.228</td>
</tr>
<tr>
<td>My mother encourages me to do better in my school work in college.</td>
<td>.810</td>
<td>.277</td>
</tr>
<tr>
<td>My mother stressed school performance prior to college.</td>
<td>.590</td>
<td>.534</td>
</tr>
<tr>
<td>How often did your mother stress intelligence in school?</td>
<td>.481</td>
<td>.611</td>
</tr>
<tr>
<td>My mother stressed intelligence in school.</td>
<td>.458</td>
<td>.635</td>
</tr>
<tr>
<td>How often did your mother tell you it was important for you to get your education?</td>
<td>.461</td>
<td>.534</td>
</tr>
<tr>
<td>How often did your mother tell you that you were smart/intelligent?</td>
<td>.194</td>
<td>.768</td>
</tr>
<tr>
<td>My mother thought I was smart/intelligent.</td>
<td>-.030</td>
<td>.770</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Eigenvalue</th>
<th>% of Total Variance</th>
<th>Total Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.74</td>
<td>56.17</td>
<td>67.57%</td>
</tr>
<tr>
<td></td>
<td>1.37</td>
<td>11.40</td>
<td></td>
</tr>
</tbody>
</table>
Table 3. Items and factor loadings for paternal attitudes toward education and achievement

<table>
<thead>
<tr>
<th>Factor 1: encouragement</th>
<th>Factor 2: perception of intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Father</strong></td>
<td></td>
</tr>
<tr>
<td>How often did your father encourage you to do better in middle school?</td>
<td>.812</td>
</tr>
<tr>
<td>How often did your father encourage you to do better in high school?</td>
<td>.843</td>
</tr>
<tr>
<td>How often does your father encourage you to do better in college?</td>
<td>.762</td>
</tr>
<tr>
<td>My father encouraged me to do better in my school work in middle school.</td>
<td>.786</td>
</tr>
<tr>
<td>My father encouraged me to do better in my school work in high school.</td>
<td>.842</td>
</tr>
<tr>
<td>My father encourages me to do better in my school work in college.</td>
<td>.791</td>
</tr>
<tr>
<td>My father stressed school performance prior to college.</td>
<td>.583</td>
</tr>
<tr>
<td>How often did your father stress intelligence in school?</td>
<td>.572</td>
</tr>
<tr>
<td>My father stressed intelligence in school.</td>
<td>.444</td>
</tr>
<tr>
<td>How often did your father tell you it was important for you to get your education?</td>
<td>.491</td>
</tr>
<tr>
<td>How often did your father tell you that you were smart/intelligent?</td>
<td>.228</td>
</tr>
<tr>
<td>My father thought I was smart/intelligent.</td>
<td>.130</td>
</tr>
</tbody>
</table>

| Eigenvalue | 7.33 | 1.14 |
| % of Total Variance | 61.06 | 9.46 |
| Total Variance | 70.52% |     |
Expanding the Conversation: Factors Influencing Quality Multicultural Literature in Western United States Elementary School Libraries

María Elena Martinez: McNair Scholar
Dr. Claudia Peralta: Mentor

Bilingual Education

Abstract

This study is a follow-up analysis of the 2012 study titled A Study of the Availability of Multicultural Children’s Literature in Treasure Valley Schools: Quality, Access, and Inclusion. The focus of the initial study was the quantity of multicultural literature available in elementary schools; the focus of the current study is the selection process of the literature. Quality multicultural literature encourages children to reaffirm the values of their own culture and come to appreciate those of others. Thus, multicultural literature has a significant impact on students developing identities. For this reason, this article seeks to investigate factors that affect elementary school’s quality multicultural literature acquisition process. Of particular interest are several elementary schools that have a relatively high content, compared to other elementary schools, of multicultural children’s literature. Librarians from these elementary schools were interviewed regarding the school’s literature acquisition process and the librarian’s personal accounts of multicultural children’s literature. Through this analysis this study examines the elementary school’s success in attaining quality multicultural literature.

Introduction

The primary purpose of this study is to gain a more holistic view of the rationale in the process of selecting literature in elementary school libraries. This paper takes particular interest in multicultural literature, how it is selected, student access to it, and the influence of the librarian viewpoint and perception of multicultural literature in the selection process.

The social responsibility of multicultural education

Social justice through education is driven by a viewpoint of social transformation by means of education. Nieto and Bode (2008) define social justice education as “a philosophy, an approach, and actions that embody treating all people with fairness, respect, dignity, and generosity” (p. 11). In addition they outline social justice education into four components. The first includes challenging and confronting misconceptions, untruths, and stereotypes that lead to structural inequality and discrimination based on race, social class, gender, and other social and human differences. The second is providing all students with the necessary resources to learn to their full potential, including books, curriculum, financial support, and so on. The third is drawing on the talents and strengths that students bring to their education. The last component of social justice education according to Nieto and Bode (2008) is creating a learning environment that promotes critical thinking and supports agency for social change.

Grounded in Nieto and Bode’s second component, quality multicultural literature is certainly an essential resource, which contributes to the opportunity for students to learn to their full potential. In the forward to Promoting a Global Community Through Multicultural Children’s Literature (2001) by Stanley F. Steiner, Alma Flor Ada interprets children’s literature as a “realm of discovery for young minds and nurturance for the young spirit” (ix). She goes on to explain that by facilitating the “magical encounter” between children and books of diverse human experience, we foster their contact with a diversity of realities and nurture their appreciation for ways of life different from their own.

Nieto and Bode’s third component of multicultural education is critical as it not only considers awareness of issues but highlights the importance of action. One way that students can achieve the action piece is by first
becoming proactive in their own learning. Nieto and Bode (2008) explain a truly fulfilling education as “education that is liberating and encourages students to take risks, to be curious, and to question. Rather than expect students to repeat teachers’ words, it expects them to seek their own answers” (p. 56). Nieto and Bode (2008) reinforce this same concept as they further define multicultural education as “An approach that values diversity and encourages critical thinking, reflection, and action” (p. 56). Multicultural education enriches student’s understanding of the world, developing their interest and passion for issues in such a way that they will be inspired to “do something” about it. Rasinski and Padak (1990) claim that “Multicultural learning achieves its pinnacles when students are motivated to challenge and act upon their beliefs and values about people who are different from them or from the mainstream” (p. 580). Vasquez (2004) explains a school event in which students who attended a school barbecue came to the realization of lack of inclusion when one of their classmates was not able to eat because he was vegetarian and there were no vegetarian options. The students decided they would write a letter to the chair of the school barbecue committee expressing their concern. They extended the issue by writing letters to other folks in the school; it is import to recognize that students were entirely invested in the issue they had developed a passion for. Inevitably this issue brought to the forefront further conversations about other groups of people who may be marginalized in similar ways at school (Vasquez, 2004).

Literature can do more than help children develop an awareness and internal value system about multicultural events and issues. Literature can provide the impetus for acting in a positive fashion on that awareness and those values. (Rasinkszi and Padak, 1990, p. 580)

Importance of quality multicultural literature for all students

Quality multicultural literature is essential, as not all literature that expresses or seems to express diversity achieves the goal of multicultural education. Yakota (1993) argues, “without cultural accuracy, a book cannot be considered a quality piece of multicultural literature” (p. 159). Furthermore, DeNicolo and Franquiz (2006) claim, “quality multicultural children’s literature engages readers with critical encounters of social (in) justice through its selective use of language, plot, and characterization” (p. 158). To be considered quality multicultural literature the ideology of the storyline must promote the importance of multiculturalism. A major purpose of using multicultural texts is the implementation of authentic multicultural education that promotes cultural pluralism, rather than monoculturalism that focuses on assimilation to a dominant culture (Yoon, Simpson, & Haag, 2010).

Inevitably, educators approach multicultural education at various levels of awareness in terms of multiculturalism and consciousness, their approach toward multicultural literature can also come from various levels. Banks and Banks (2007) use the following framework, Ford-Harris Multicultural Gifted Education Framework, which incorporates Bloom’s Taxonomy. This framework covers four different levels: contributions, additive, transformation, and social action.

<table>
<thead>
<tr>
<th>Contributions</th>
<th>Knowledge</th>
<th>Comprehension</th>
<th>Application</th>
<th>Analysis</th>
<th>Synthesis</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are taught and know facts about cultural artifacts, events, groups, and other cultural elements.</td>
<td>Students show an understanding of information about cultural artifacts, groups, etc.</td>
<td>Students are asked to and can apply information learned about cultural artifacts, events, etc.</td>
<td>Students are taught and can analyze (e.g., contrast) information about cultural artifacts, groups, etc.</td>
<td>Students are required to and can create a new product from the information on cultural artifacts, groups, etc.</td>
<td>Students are taught to and can evaluate facts and information based on cultural artifacts, groups, etc.</td>
<td></td>
</tr>
<tr>
<td>Additive</td>
<td>Students are taught and know concepts and themes about cultural groups.</td>
<td>Students are taught and can understand cultural concepts and themes.</td>
<td>Students are taught to and can apply information learned about cultural concepts and themes.</td>
<td>Students are taught to and can synthesize important information on cultural concepts and themes.</td>
<td>Students are taught to and can critique cultural concepts and themes.</td>
<td></td>
</tr>
<tr>
<td>Transformation</td>
<td>Students are given information on important cultural</td>
<td>Students are taught to and understand and can demonstrate an understanding of important</td>
<td>Students are taught to and can examine important cultural concepts and</td>
<td>Students are required to and can create a product base on their new</td>
<td>Students are taught to and can evaluate or judge important cultural concepts and</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Ford-Harris Multicultural Gifted Education Framework—description of levels
elements, groups, etc., and can understand this information from different perspectives.
of important cultural concepts and themes from different perspectives.
concepts and themes from more than one perspective.
perspective or the perspective of another group.
themes from different viewpoints (e.g., minority groups).

| Social Action | Based on information about cultural artifacts, etc., students make recommendations for social action. | Based on their understanding of important concepts and themes, students make recommendations for social action. | Students are asked to and can apply their understanding of important social and cultural issues; they make recommendations for and take action on these issues. | Students are required to and can analyze social and cultural issues from different perspectives; they take action on these issues. | Students create a plan of action to address a social and cultural issue(s); they seek important social change. | Students critique important social and cultural issues, and seek to make national and/or international change. |


At the knowledge – contribution level, for example, students are provided with information and facts about cultural heroes, holidays, events and artifacts. For example, students might be taught about Martin Luther King, Jr., and then asked to recall three facts about him on a test. They might be introduced to Cinco de Mayo and be required to recite the year when it became a holiday. On the other hand at the evaluation- social action level, students might be asked to conduct a survey about prejudice in their local stores or businesses. This information could be given to store owners, along with a plan of action for change, such as developing a diversity-training program (Banks & Banks, 2007). At its deepest and most ideal form, Banks and Banks (2007) argue that multicultural education “consists of deliberate, ongoing, planned, and systemic opportunities to avoid drive-by-teaching- to make learning meaningful and relevant to students” (p. 416). Multicultural education is neither an activity that happens at a set period of the day nor another subject area to be covered (Nieto & Bode, 2008). In order to be most effective, multicultural education needs to be a consistent and thoughtful process throughout the classroom experience. Nieto (2002) states, “culture is complex and intricate: it cannot be reduced to holidays, foods, or dances, although these are of course elements of culture” (p. 9).

Despite the growing awareness of the importance of multicultural literature, a limited approach to learning about diversity is all too common. Some schools dedicate only one day or several days to a cultural group. We observe classrooms around the country recognizing the birthday of Martin Luther King, Jr. or Cinco de Mayo celebrations with their displays of African American and Latino/Latina books. The observance of these two occasions is commendable, but we have to ask, is this enough? Does this limited attention given to an ethnic group reach an overall goal of promoting awareness and harmony? (Steiner, 2001, p. 4)

Multicultural literature is an asset in the lives of all students. Students from all backgrounds benefit from it, as all students have the potential of suffering from a biased education. As a result from a biased education the humanity of all students is jeopardized (Nieto & Bode, 2008). It is a common belief that Anglo dominated schools don’t have a need for multicultural literature, under the argument that underrepresented groups are the principal beneficiaries, but in fact the Anglo student community can greatly benefit from the exposure to other cultures and beliefs other than their own.

Multicultural education is, by definition, inclusive. Because it is about all people, it is also for all people, regardless of their ethnicity, ability, social class, language, sexual orientation, religion, gender, race, or other differences. It can even be convincingly argued that students from the dominant culture need multicultural education more than others because they are generally the most miseducated or uneducated about diversity. (Nieto & Bode, 2008, p. 51)
Quality multicultural literature is important for all students, depending on their individual experiences and backgrounds they may be affected differently by this type of literature. Regardless of the angle that multicultural literature impacts them, certainly all student benefit from quality multicultural literature.

Educators through their educational choices, influence the development of student identities, it is imperative to recognize the importance resources such as literature, particularly multicultural literature, can add to this development. Students, as people, are experiencing identity development and they can be at various stages of this process. Literature should be a support in this exploratory phase in their lives, in Ferdman’s (1990) view, curriculum, and by extension, instruction ought to “facilitate the process by which students are permitted to discover and explore ethnic connections” (p. 200). I argue that this can also be true for other identity connections such as gender, sexual orientation, etc. Quality multicultural literature can certainly provide the exploratory opportunity for students. In the following excerpt, Alma Flor Ada explains the important role literature plays in understanding one’s own culture in order to embrace others.

Books that allow children to see themselves, in a positive role particularly when the prevailing vision of their own culture has been ignored, distorted, or hurt by stereotypes, is to give them an opportunity to affirm their identity. Once a child’s sense of dignity and belonging is truly affirmed, it will be possible to accept and celebrate the dignity of others, and to develop full understanding of the uniqueness and humanness of others (Steiner, 2001, X)

Educators and authority figures in educational settings have the power to foster connections for students. Nieto and Bode (2008) explain the findings of a recent study conducted by Marco Pizzaro.

Significantly, the most successful students were those who had been mentored, through the various transitions of their schooling, by teachers and other authority figures who linked the student’s identities with their schooling. That is, when teachers viewed student identities in a positive way and connected the student’s education (2008, p. 80)

Also, Cummins (1986) claims that students are empowered or disabled as a direct result of their interactions with educators in the schools.

Not only is multicultural education and literature beneficial to students at a personal level as they develop their identities but it can also affect their academic growth. Cummins (1986) argues that English language learners will succeed or fail to the extent that their language and culture are incorporated into the school program (Jiménez, 2000, p. 973). Likewise, multicultural education can enhance the academic experience for students of the dominant or gifted culture, Banks and Banks (2007) claim, “Multicultural gifted education challenges students culturally, affectively, academically, and cognitively” (p. 416). In a study by DeNicolo and Franquiz (2006) students read literature containing racially loaded social labels in literature circles. The researchers explain, after their encounter with this type of text students were inspired to construct meaning by becoming active participants in the discussion, they expressed agreement and disagreement, despite having roles and being reluctant participants beforehand. The critical encounter gave students the ability to use language, not just for surface features, but also for communicating thoughts, taking positions, and questioning the inferential reasoning of others (p.165).

Background

This study is a follow up analysis of the 2012 study titled, A Study of the Availability of Multicultural Children’s Literature in Treasure Valley Schools: Quality, Access, and Inclusion. The primary purpose of this first study was to focus on the availability of quality multicultural children’s literature in elementary school libraries in Western United States. The quality of the literature was measured by using a select group of twelve awards (Martinez, 2013, p. 54), which honor culturally relevant literature. This literature is representative of various cultures including the LGBTQIA culture, physically and mentally challenged culture, as well as diverse ethnic cultures. Twenty-nine school libraries across four different school districts in Western United States were analyzed. Through this study I found that multicultural literature is very limited in elementary school libraries in the area studied. In addition, it was also found that the number of quality multicultural books varied greatly from school to school and across school districts. Due to this irregularity, this study will focus on finding out more about the decision making process at the school library level.
Though literacy is a much broader concept than merely reading and writing or the materials necessary to go about these activities, both reading and writing are a large part of literacy in the lives of elementary students. Reading is a significant part of the elementary school curriculum, thus students interact with literature in every content area on a daily basis. This is why it is vital that students are provided with adequate access to quality literature, whether students are being instructed with specific literature or students are learning to read for pleasure. They should have access to quality literature that is enriched with meaningful content and interactions among characters, including quality multicultural literature where students see their culture represented in the books.

School libraries are constantly filled with young students eager to discover books that capture their attention. Students from every grade level and every class get to experience the library throughout the week, making its literature content a valuable collection. All elementary students have access to the library’s literature, for some students it could potentially be the only library they have access to. Elementary school libraries are the perfect location for students to begin exploring quality multicultural literature.

Methodology

This study was administered through three open-ended interviews conducted with elementary school librarians. I made an effort to interview eight librarians based on the results of my first study. According to the results from the 2012 study, these eight libraries contained the highest content of multicultural literature of the twenty-nine schools that were studied in Western United States. However, not all school librarians were able to participate due to scheduling conflicts and/or personal decisions. The three participating librarians, who agreed to participate, were chosen based on the content of their school libraries. The three school libraries all had over ten of the titles from the measure used in the 2012 study, seventy-one titles total. Though this is not a high number by any means, it was significantly higher than other school libraries studied the previous year. The interview included four sections. The first section was regarding general personnel information about the school librarians, such as their educational background and the length of time they had carried on their profession. This part of the interview contained questions such as, what is your official title? The second part addressed general school library information, which looked into the general operation and organization of each particular library. This part of the interview included questions such as, what type of catalog does your library utilize? The third part focused on the book selection process itself, this is where questions were asked regarding the specifics of how books are selected, for example, financially, how does your library attain books? The last section centered on the personal viewpoint of the school librarians, this section focused largely on the opinions of the school librarians regarding multicultural literature. This section of the interview included questions like, what do you consider to be multicultural literature? What is your definition of multicultural literature?

The focus of the interview was to find factors that most affect the content of the school libraries in terms of quality multicultural children’s literature. In these particular schools, selected based on their high content of quality multicultural literature, in comparison with others in the area, the factors were predicted to inform ways to attain a higher quantity of multicultural literature at other school libraries. It was hypothesized that the selection process from these libraries could be used as models for other schools looking to improve their selections of quality multicultural children’s literature.

Results and Discussion

Findings indicate factors that have allowed elementary school libraries to succeed in the attainment of quality multicultural literature, but also factors that limit the attainment of such literature. Findings also reveal that student demographics, as well as personal world experiences and personal concern for multiculturalism may positively influence the content of their elementary school libraries in Western United States. On the other hand, explanations given by the librarians revealed major limitations in attaining multicultural literature for their school library and school libraries in general, including lack of resources and limited personal understanding of the

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3 To reliably measure quality of multicultural books in the elementary school libraries, a measure was composed of awarded books. Thirteen different awards were chosen and used based on the purpose and criteria for which they award children’s literature. The measure included the three most recent books, which had been awarded each of the awards, at the time of the study.
significance of multicultural literature. Librarians also report suggestions for improvement of quality multicultural literature in elementary school libraries.

Success of multicultural collection in libraries

As discussed earlier, the librarians interviewed had a higher number of quality multicultural books than did others in the Western United States. Librarians attribute their success in attaining more literature than other schools to several factors including student populations, personal experience, and personal viewpoint about multiculturalism.

Librarians recognized their school’s student population, specifically the diverse ethnic demographics of their school, to have a significant influence in the selection of multicultural literature in their libraries. Ms. Tonya shared, “at our school we have a bigger ELL (English Language Learner) population, so I’ve tried to incorporate books that are from their countries, or you know, from their backgrounds.” Ms. Tonya demonstrates being cognizant of a large group of students in her school who have recently arrived to the United States from various countries. To make students feel welcome in their new school she deliberately puts forth effort to include literature that represents their background in some form.

Another significant factor librarians revealed as meaningful to their selection of multicultural literature was their own personal experiences, particularly their experiences with traveling. Ms. Yolanda shared,

I love to travel and I was very fortunate to travel very early in my life from the time was about ten, I traveled to Europe and other continents and I know how important it is. I know how it helped me be more tolerant and understanding of other people (personal communication, October 8, 2013).

Ms. Martha also expressed her sentiments based on their experience of seeing the world,

I also think it’s very important to be exposed to other parts of the world. I was very lucky, I grew up in the Air Force, I traveled a lot of different places that other kids my age didn’t, and it shaped me. I learned a lot. I was in high school… but I think those things are important, kids need to know that the world is not just what’s happening in their house (personal communication, October 9, 2013).

Librarians point directly to their personal experiences of traveling as an important part of their lives from which they were able to gain insight into the lifestyles of other parts of the world. They made connections with this experience and how that has shaped them as people. Ms. Martha mentions her desire for students to also learn the experience of people around the world, alluding to the possibility of literature providing this opportunity.

Lastly, not only do librarians value worldly perspectives based on their own experiences but they go on to indicate their regard for the importance of multiculturalism to be a contributing factor in their collection of multicultural literature. Ms. Martha explains her reason for having a larger collection of multicultural literature than other schools,

I’ve tried to always look for something that’s a little extra, something that’s multicultural, something that comes from a different viewpoint because I think it’s important, it teaches tolerance. That’s something our kids don’t necessarily get and I think it’s important. When I can find a book about a famous person that’s different from what they expect to see… if I can find a famous person that’s from their heritage [I try to get it] (personal communication, October 9, 2013).

Ms. Martha values the viewpoint of the likely, underrepresented groups. She also indicates that she keeps mindful of the underrepresented students she serves by looking to provide literature that represent students and possibly role models from their own background. On the flip side she also looks into providing literature that may raise awareness of both underrepresented students and students from the dominant group by expanding on viewpoints that may be different from both.

4 Pseudonyms are used for all participating library professionals in this study.
Limits of attaining multicultural literature

Lack of resources. As budgets suffer in various divisions of educational settings, the budget for elementary school libraries does as well. School libraries receive a very low budget on an annual basis and it is subject to change from year to year. All three librarians interviewed express their concerns regarding funding. Ms. Martha states, “I have a $190 budget for the year, mostly for repairs.” Ms. Yolanda also shares about her budget, “The first time when I came in 2009 the budget for the library I think it was about $2,000 and the next year… From then on it was $0, yeah $0!” Ms. Tonya also gives a brief history of what her budget has been over the course of the past few years.

When I first started, the district… in this district I think we were given about $10 per student… $8-$10, maybe $11 per student so each school, depending on your population would get you know $3,000, $4,000, $5,000 depending on the number of kids you’d have. My school has about 350 well now it’s about 340 I think. So when I first started I had a little over $3,000, and there were a couple of years when we had zero budget, nothing from the district. Now we’re back to about $4 per student (personal communication, October 8, 2013).

In response to the low budgets allotted to the librarians from their respective school districts, on an annual basis, they discussed turning to various forms of fundraising such as relying on the Box Tops for Education® collection at their schools, book fairs, Parent Teacher Organizations (PTO) events, and applying for grants in order to supplement the annual funding received from their school district for purchase and repair of books.

We have a Scholastic book fair every year and the PTO is so wonderful that they give me [Ms. Yolanda] the money they earn. There are two fairs and we get the money for one of them, the first one. And that’s usually maybe a couple thousand dollars. With that money I buy only through Scholastic, because you get dollar for dollar. If we had $2,000.00 and they gave me [Ms. Yolanda] a check I would only get $1,000.00 so it’s half so… I’ve written grants before… so I’ll write a grant, like last year I wrote a grant and I got $1,500.00 that I will be spending all on nonfiction because we were so deficient in certain areas. This last summer we got a grant for about $1,600 for our pre-k through 1 grade (personal communication, October 8, 2013).

Having a low budget significantly and directly impact the literature available in the school libraries, thus affecting the availability of quality multicultural children’s literature. Librarians are concerned with funding repairs and replacements of lost or damaged books, which is currently on their shelves. Librarians also focus much of their time and energy toward seeking financial aid that can be applied toward supplying their libraries with literature.

Understandings of multicultural literature. Librarian definitions of multicultural literature was significantly different from the one presented in this paper. My definition of quality multicultural literature is literature that accurately portrays views and cultures of underrepresented populations, discussed earlier. Ms. Tonya describes multicultural literature in her view, below,

If it’s you know around Martin Luther King Day, I go through and pull all those books out (display) or if it’s you know African History Month, which I think is February, I try to pull those books out… something that I know is happening at that time of the year (personal communication, October 8, 2013).

Ms. Tonya’s definition of multicultural literature indicate her approach of multicultural education to be at the Contribution and Additive levels and stay within the Knowledge and Comprehension levels, based on the Ford-Harris Multicultural Gifted Education Framework.

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5 Box Tops for Education® is one of the nation’s largest school fundraising loyalty programs. Participating products include coupons, each worth 10¢, on their packaging. Consumers collect the coupons, turn them in to local schools, and schools can then redeem them for money.
In addition, librarians also indicate understandings of multiculturalism to be concepts of foreign experiences from abroad, rather than the daily lived experience of a multicultural society. Ms. Tonya shares her approach,

It’s [multicultural literature] dealing with different nationalities, or cultures or countries. So each …. I guess you would say race, or religions, you know… they have different traditions, holidays… so anything that deals with that. So like even at Christmas time the Spanish, you know like we have a book about tamales (personal communication, October 8, 2013)

In this explanation of her definition of multicultural literature, Ms. Tonya, expresses her view of multicultural literature to express ways of life from other places of the world. She expresses her understanding of multiculturalism to be of the cultural components of people in other parts of the world, not necessarily the experiences of people from other parts of the world here, in the United States. Ms. Tonya continues to express her approach to be at the Contribution and Additive levels and stay within the Knowledge and Comprehension levels, based on the Ford-Harris Multicultural Gifted Education Framework.

Willingness to improve quality multicultural literature collections

Elementary school librarians reported knowing about the lack of multicultural literature in elementary school libraries and offered some suggestions for improvement.

First and foremost, librarians suggested an increase in their budget. Ms. Yolanda shares her opinion about helping increase multicultural literature in school libraries, “I think whoever is in charge needs to look at the budget of our libraries….. if there’s more money for more books than, you know it would teach compassion and understanding that people are very much the same.” Ms. Yolanda looks at a budget increase as not only an opportunity to increase the availability of literature but she connects the idea of exposure to quality multicultural literature as an opportunity to increasing multicultural education.

They also communicated interest in more direct information about available quality multicultural literature. Ms. Martha, “Not being totally aware of what’s out there [affects the content of our libraries]. Maybe just having information sent to our school, like pamphlet like when the award winners come out [would improve our collection of multicultural literature].” She suggests that simply outreach to the librarians from companies or award associations would help in librarian awareness of the availability of quality multicultural literature.

Lastly, librarians consider themselves and their libraries to be resources, and they highlight their desire for classroom teachers to utilize their expertise to make connections with classroom curriculum. Ms. Martha shares, “(teachers utilizing the library as a resource is) happening more, but I think it could happen more often. That’s what I’m here for. I want them to be using me for that sort of thing.” She is interested in helping supplement materials and topics being addressed in the classroom, as Ms. Yolanda describes her experience,

I try to go along with what the different classes are teaching. I know that some of them have units on different countries, and it would be nice if the curriculum included a little bit more on that. I think they do this in a very small way and I’m not sure that they even do it in every grade. So that would be nice to have the curriculum reflect the different cultures of our country (personal communication, October 8, 2013).

It’s important to Ms. Yolanda to be alert of the different topics that classes are focused on in the classroom. She expresses deliberate intentions of making connections with the classroom curriculum. However, she does voice her concern for the limited attention to multiculturalism in the classroom, and her desire for multiculturalism to be more embedded in the curriculum.

Conclusion

Despite a handful of school librarians having been successful at attaining a reasonable quantity of multicultural literature in elementary schools in Western United States, as a whole there is certainly room for

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6 Eight schools, of the twenty-nine analyzed in 2013, had over ten books from the measure (seventy one books).
improvement in these school libraries as well as others. The issue of elementary school libraries having limited quality multicultural literature can be attributed to various factors, there is no one single pointing element. However, funding is certainly a major player. The current lack of quality multicultural literature is directly connected to the limited budget allotted to school librarians for purchase of literature. Not only is funding literally affecting the quantity of quality multicultural literature in elementary school libraries, but it also has the potential to have effects on professional development opportunities concerning multicultural literature and multicultural education for elementary school librarians. The librarians interviewed indicated having professional development meetings, at least once a month, depending on the district. Professional development opportunities can be a tremendous benefit, as they are a prospective way for outreach in education and awareness for librarians regarding multiculturalism in education and quality multicultural literature. This is particularly important, as there are no specific librarian training requirements for the position of elementary school librarians in the area studied. In fact, the official title of the participating librarians was either library media manager or library paraprofessional. None of the participating interviewees had received any field specific training or education for the position of elementary school librarian. There are little to no academic requirements for library positions in the area studied, which can impact two areas I have discussed earlier. The first is understandings of diverse student populations and ways in which culturally relevant literature can impact all students, particularly students from underrepresented groups. Secondly, because of the lack preparation library professionals receive; the literature collections of elementary school libraries are predispositioned to be bias. The collections can more noticeably reflect the personal viewpoints of library professionals. Despite all these issues and needs, librarians demonstrate a strong willingness to participate in educational opportunities, which could improve their understandings of the importance of quality multicultural literature.

It is crucial that librarians and administrators continue to seek ways to attain reasonable sums of quality multicultural literature for their elementary school libraries. The literature and school librarians agree, it’s beneficial to students in many ways to have accessiblity to quality multicultural literature.

Based on the findings of this study, I recommend funding be provided, either by school districts or even from the state level, specifically for multicultural literature. In addition, professional development such as workshops, courses, and or presentations on multicultural literature elementary school library professionals should be a requirement. In an ever-growing diverse society it is vital for students to be exposed to worldly views in academic resources.

Acknowledgements

I received exceptional support throughout this study, without it, this research could not have been possible. First, I would like to thank my faculty mentor Dr. Claudia Peralta for her dedication, support, and guidance through the entire research process. I would also like to thank Helen Barnes for the direction and encouragement in the development of this study. I would also like to thank the McNair Scholars Program, my cohort(s), Memo Cordova, and Greg Martinez for fostering the opportunity to grow as a researcher. Lastly, I would like to dedicate this work to my family and loved ones for their sacrifices and most importantly for always believing in me and standing behind me in my journey.
References


Avida Checkpoint/Restart Implementation

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Abstract

As high performance computing centers (HPCC) continue to grow in popularity, issues of resource management and reliability are becoming limiting factors in scheduling long-running jobs. One of the factors is time. Efficacy of Avida, the platform of research for digital evolution, is limited by the allocated time available on HPCC. Saving the state of the software at a point and restarting the execution from the paused state will allow for better resource utilization, as well as help reduce restrictions that constrain the potential of the software. This research examines whether or not Berkeley Lab Checkpoint/Restart (BLCR) can be integrated with the run script that is used for Avida. Adding checkpoint/restart functionality to Avida will have multiple impacts on, effectiveness of the software and future research.

Introduction

Increasingly, scientists use computer experiments and simulations to study real-world models and systems. Computer simulation software has significantly altered the way research is being conducted. Often, in science, technology, engineering, and mathematics fields, scientists use computer modeling when the real-world system is not feasible to study. For example, when studying evolution, scientists need to overcome the obstacle that evolution happens extremely slow [3]. Considering this fact, related experiments are conducted only with organisms that can undergo many generations in a short amount of time [4]. At the Bio-Computational Evolution in Action Consortium (BEACON) Center, researchers utilize Avida software, an artificial life platform, to study evolutionary biology.

The digital Avida organisms, Avidians, are capable of evolving and replicating very quickly. In a computer, it is easy to measure any number of generations one might be interested in studying with arbitrary precision. However, the number of generations and the time it takes to propagate organisms for several thousand generations is limited by the processing power available [4]. At Michigan State University the High Performance Computer Center (HPCC) only provides, at most, one week of continuous computational power for a job running on the cluster. In other words, if an experiment requires a time frame of more than one week or 168 hours of wall-time, HPCC will not be able to provide the resources necessary.

When one week of computational time is not sufficient it, it seems obvious that researchers would want to save the state of the software and restart from the same point for another period of time, repeating the process as necessary. However, Avida software cannot save its state. In other words, the application does not have comprehensive checkpoint/restart feature implemented. The goal of this research project is to improve computational tools that scientists and researchers use to study evolutionary biology models by adding checkpoint/restart functionality to Avida software.

Background

In this research we examine whether or not Berkeley Lab Checkpoint/Restart (BLCR) can be integrated with the dist_run program that is used to schedule Avida jobs. This section will attempt to explain these modules.
Checkpoint/restart

Checkpoint/Restart mechanism saves the entire state of a program to a file and allows the program to be stopped and resumed from that file on the same system or similar system. For applications, productive checkpoints can reduce or even eliminate loss of work in case of hardware or software failure.

Berkeley Lab Checkpoint/Restart (BLCR)

Berkeley Lab Checkpoint/Restart (BLCR), developed by Lawrence Berkeley National Laboratory, is a loadable kernel module (LKM) that allows checkpoint and restart of Linux processes. LKM is an object file that extends the base kernel of the operating system to add support for new hardware, file systems, or for adding system calls. Checkpoint/Restart is vital for long-running jobs on high-performance clusters because it aids computations with fault tolerance and reliability. BCLR has grown in popularity for its versatility and ease of integration with other frameworks, since its first release in 2005. Since then twenty-five more versions were released with added support to checkpoint wide range of applications [2]. One of the early projects that utilized BCLR as a back-end support for checkpoint/restart systems was the Local Area Multicomputer (LAM)/MPI, project (LAM/MPI is a high-performance, open source implementation of the Message Passing Interface (MPI) standard that is researched, developed, and maintained at the Open Systems Lab at Indiana University [1]). BCLR kernel level process checkpoint system was integrated LAM/MPI to design a system for providing coordinated checkpointing and rollback recovery for MPI-based parallel applications, allowing the system to be used for cluster maintenance and scheduling reasons as well as for fault tolerance [6]. For applications that can be checkpointed, productive checkpoints can reduce or even eliminate loss of work in case of hardware or software failure.

dist_run

dist_run is a program written by David Bryson, a digital evolution research specialist at the BEACON Center at Michigan State University. Researchers use dist_run as a submission script to Avida software when it needs to be run on multiple computer systems. The dist_run tool is widely used by researchers at Michigan State University and is integrated deeply in the research groups’ workflow. The disadvantages of using dist_run for implementation of checkpoint/restart is that the tool is not up-to-date with advanced job scheduler functionality, such as the those provided by Terascale Open-Source Resource and QUEue Manager (TORQUE), adopted by HPCC at Michigan State University. However, we will be working on modernizing the dist_run tool as we append checkpoint/restart functionality.

Methods and Design

The advantage of using Berkeley Lab Checkpoint/Restart for us is that it is has been successfully built, installed, and configured on HPCC and is capable of providing checkpoint/restart support to shell script running scientific workloads on wide variety of networks. The module easily fits production systems due to the fact that the source code of application and binaries does not require modification or special compile/link in most cases. Although statically linked executables need linking with BLCR's 'libcr_run' library to secure that the application contains some library code that BLCR provides, dynamically linked executables only require to be started with cr_run command to load the BLCR library into the application at startup time. Since Avida is dynamically linked cr_run can easily ensure that Avida will be checkpointed and restarted with minimum effort. After a careful evolution of dist_run program it was modified to include BLCR commands with the aim of adding checkpoint/restart functionality to Avida. Figure 1 demonstrates post modification flow of dist_run program execution.

Testing

Modifications of the program were tested considering the four test cases below.

1. Submitted job does not contain a checkpoint file and runs longer than wall-time. The program will need to checkpoint at the end of wall-time and resubmit to continue computation.
2. Submitted job does not contain a checkpoint file and runs less than wall-time. The program does not need to checkpoint at the end of wall-time and needs to exit.

3. Submitted job contains a checkpoint file and runs longer than wall-time. The program will need to checkpoint at the end of wall-time and resubmit to continue computation.

4. Submitted job contains a checkpoint file and runs less than wall-time. The program does not need to checkpoint at the end of wall-time and needs to exit.

Figure 1: Integration of BLCR with dist_run program
Results and Discussion

Scientists use Avida as an evolutionary computing platform to propagate generations of digital organisms. In this research, checkpoint/restart was successfully implemented for Avida software by integrating BLCR and dist_run program.

Impacts on digital evolution research

As a result of the integration of BLCR and dist_run, Avida jobs can:
- recover from hardware failures
- pause and restart from the point they left off
- start on one hardware platform and finish on another

Impacts on high performance computing center

In this research we were able to overcome the shortcomings of time-restricted computing systems allowing HPCC to:
- provide computing resources for long-running jobs
- utilize resources allocated for short-running jobs
- increase reliability and fault tolerance

Adding checkpoint/restart functionality to Avida has multiple impacts on the research; long-running jobs (weeks or months) are able to run on time restricted computing systems (hours or days). Long-running jobs are more robust to system failures, and interesting future digital evolution research can be conducted, given, availability of computing resources.

Conclusion

This research presented a checkpoint/restart implementation for Avida jobs that has been implemented in dist_run tool using BLCR as the checkpointer. Integrating checkpoint/restart feature with Avida enables researchers working with the software to disregard computational limitations and focus on other complexities of research.

Future Work

We will consider exploring other implementations of checkpoint/restart for Avida. BLCR is system level implementation and it would be beneficial to compare the module with library-based checkpointer. Exploring the following frameworks will grant us a better understanding of different modules.
- Condor
- Score
- CoCheck
- BPRoc

Acknowledgments

The author wishes to express her appreciation to and acknowledge the help and support of Dr. Dirk Colbry, Dr. David Bryson, and Dr. Judi Clarke.
References


Abstract

For México, the sixties became a decade of social movements, modernization attempts, and a golden age for the middle class. Yet, historians often overlook the sixties because it is seen merely as a period of economic growth. However, many sources that are seldom analyzed portray a different history of México. This project utilizes corridos, or narrative ballads, as primary sources to depict a history of rural México during the sixties. The corridos portray the economic struggles, land appropriation, and the deprivation of campesinos' basic rights throughout Mexico. These corridos and other alternative sources recount a history of the underprivileged that is often not told. For the project, corridos are translated into English, analyzed and historically interpreted. This project will contribute to the history of the sixties and demonstrate the importance of alternative primary sources.

Introduction

I will tell you what’s happening
in Mexico, it is ill
from the misery the people
are gifted by their government
-Judith Reyes7

In 1961 Judith Reyes described Mexico through a corrido, or ballad, titled “Los Rebeldes.” Reyes, who composed numerous corridos in the sixties, uses music to depict the lives and struggles of the rural masses in Mexico. In the stanza above, Reyes portrayed Mexico as being in an ill condition because of the miseries that it received from its government. She later goes on to describe those miseries as lacking water, electricity, milk, eggs, and literacy. Reyes’ description contradicts the image that the Mexican government attempted to portray during the sixties. Through corridos like these, Reyes and many other corridistas sing and recount the lives of rural people in Mexico. Their corridos give a voice to and record the needs of marginalized underrepresented rural people whose voices would have otherwise been lost.

The use of alternative sources, such as corridos, to write history is significant because different sources recount different perspectives. History needs to be presented and understood through different perspectives and angles. Limiting the range of sources can omit significant details, which are vital for understanding the past of a particular group of people. Oftentimes, the experience of underrepresented illiterate masses is the history that is left out. This is not because there is no interest or need for their stories, but rather there are usually not enough sources available to recount them. Corridos can play a crucial role as alternative sources; they can be utilized as oral depictions for a particular community’s experiences. These oral depictions are critical because they uncover the history of the people being portrayed in corridos. Furthermore, alternative sources demonstrate the different roles that historical actors contribute and how they impact history.

In her book, Waking from the Dream: Mexico’s Middle Classes After 1968, Louise Walker writes about the impact the middle class had on Mexican economics and political history from the sixties and up to the nineties. She states that during this period the middle class was at the “center of these changes” and their reactions shaped recent

While this may hold some truth, the actions of other people were just as critical during this time. The stories that corridos bring to the surface need to be known and recounted in order to better understand recent Mexican history. One single event or group of people cannot depict an entire history and one single set of sources cannot provide all the evidence. As Walker puts it, “It is time to de-center the 1968 student movement in explanations of Mexican History.”9 This article asserts that, when analyzed historically, corridos can be utilized as primary sources to interpret and depict an alternative history of the sixties.

Corridos have been prevalent throughout post-colonial Mexican history. This constancy deepens corridos’ significance as sources. Since the Mexican Revolution, when they took on a modern defined form,10 thousands of corridos have been written throughout every year on various events and topics. This makes it possible to listen to or read corridos and learn about any particular year or event. It is then possible to extract significant historical information from corridos. The following are examples of what corridos can answer: What was important to people? How did they live their daily lives? What behaviors did people portray? How did their actions impact society and other communities around them? What were the roles of women and children? Did people feel they were exploited? These and many other questions can be formulated and answered by analyzing corridos. The long history of corridos and the broad spectrum of oral depictions that they provide may help close historical gaps.

This project will illustrate the usefulness of corridos by responding to two key questions. First, how can corridos be used as primary sources? And second, how do corridos depict the sixties? Corridos, as stated above, narrate a broad range of stories and voices. Antonio Avitia Hernandez, in his five-part book series, Corrido Histórico Mexicano, describes each corrido as being a “loose and scattered thread.”11 In these threads the corridista imbeds the year, the protagonist, and the issue or message; these traits provide a brief surface narrative of the corrido. However, if critically analyzed, corridos depict a further deep-rooted history. For example, in her book The Mexican Corrido: A Feminist Analysis, Maria Herrera-Sobek analyses corridos, which are mainly written by men, to extract and depict the complex roles that women had in Mexican history.12 These roles, along with many others, demonstrate how different protagonists and themes are imbedded in various corridos, even if written by men. The same concept can be applied to a particular time period. In order to depict the sixties, different themes, events, and protagonists can be extracted and examined. By analyzing corridos as primary sources they provide a descriptive alternative history of the sixties.

**Literature Review**

In order to write an unconventional history a variety of sources need to be examined. This includes sources that are not commonly utilized when reconstructing the past. These sources can uncover and provide an alternative history. Music is a primary source that if analyzed correctly can reconstruct a detailed oral history. Historian Jeffrey H. Jackson and musicologist Stanley C. Pelkey argue that “music might help to recover the lives of those lost to more traditional forms of history.”13 Being able to recover those voices will only enrich and strengthen larger social historical questions. In other words music is able to complement and add to other more defined primary sources.

It is important to use music in order to empathize and learn from the listeners. One being that music is an everyday form of expression that details people’s thoughts, emotions, and lives. Also, music holds a personal value to the listeners and examining it will assist historians to extract those significances. This makes music an excellent source, especially when writing from an outsider perspective about people who are often underrepresented in history. But perhaps the main reason to analyze music is to understand the daily lives and culture of people. Jackson and Pelkey agree that music is important to understand “all aspects of the human experience”14 and in essence to

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“contribute to the larger understanding of the ways in which people create and represent their lives.” Furthermore, Lawrence W. Levine, a historian known for promoting the perspectives of ordinary people in history, believes that utilizing alternative sources such as music is important in order for historians “to listen to the voices of their subjects with imagination and empathy and to recreate their lives with accuracy and sensitivity.” In short, music is an excellent source for historians to challenge and widen their historical analysis and interpretations.

How do historians utilize music to reconstruct the past? To begin historians must immerse themselves into the music; doing so is like listening to the past. Lyrics need to be thought of as the voices of people. Levine states that while analyzing music he is able to find “the voices of people who, living in oral cultures, had been unusually articulate.” These voices heard in music, express and represent the emotions and beliefs of a particular group of people. These expressions are important in order to do justice to people’s history.

However, doing justice to people’s history through music can become problematic. Albert B. Lord, in The Singer of Tales, argues that rhythmic oral narrators must stay “within the limits of the rhythmic pattern.” He goes on to further state that music has “a rhythmic fixity which the singer cannot avoid” and now the singer has the difficulty of “fitting his thoughts and their expression into this fairly rigid form.” Historians need to be aware of these limits and fixity when reading music in order to avoid generalizations. Nevertheless, music is an integral aspect of daily life, and it must be considered and analyzed when narrating people’s voices.

Finally, corridos express and portray these voices. Corridos, or ballads, poetically and lyrically narrate events, emotions, or experiences. Daniel F. Chamberlain, a scholar on Mexican oral narrative traditions, states that corridos play a role in “telling the stories that communities have come to hold as true expressions of their character in a… historical sense.” This role has also allowed corridos to preserve the voices and stories of people throughout time. However, these corridos could not have been preserved without a narrator. The composers, or corridistas, tend to either write about what they witness or write the accounts narrated to them by people. When Antonio E. Muñoz, a journalist and novelist, once wrote, “history is not only written by the victors… but also by troubadours, and in better forms: even with music,” he was referring to corridistas. These narrators are able to project the strong sentiments from the protagonists.

Corridistas most often recorded the accounts of underrepresented people from rural communities also known as campesinos. This dates back to the Mexican Revolution when people in rural towns were limited in the ways they recounted the events they witnessed. But as the war ended and time went on, people continued to utilize corridos to express themselves. This has made corridos very popular among campesinos throughout Mexico and has defined corridos as the voice of rural people. This is important considering large majorities of campesinos had little formal education. The voices that corridos have preserved provide an alternative history to the conventional thought of Mexico during the sixties.

**Mexico in the Sixties**

Historians consider the sixties to be an economic growth period for Mexico. The country’s massive economic development pushed Mexico to the verge of gaining a first-class nation status, a status the Partido Revolucionario Institucional (PRI) had been eager to achieve for years. But it had only been an illusion. For the first time in Mexican history, the urban population exceeded the rural population, a sign that the country was becoming modern. During this time, Mexico also earned the right to become the first Latin American country to host the Olympics. The economic growth period between the 1940s and 1970s is known as the Mexican Miracle. The main beneficiaries of the Mexican Miracle were the middle class. The middle class benefitted from high levels of education, nonmanual or technical work, and lived in urban environments where they had access to leisure and

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15 Jackson and Pelkey, *Bridging the Disciplines*, p. xii.
21 Institutional Revolutionary Party
This miracle became a blessing for the middle class but a curse for the underrepresented rural masses. The significance of the middle class growth during this period can be attributed to different factors. One primary factor is the economic strategy of Import Substitution Industrialization (ISI) that Mexico adopted. With the adoption of ISI, Mexico created jobs and provided opportunities for business owners to expand. The ISI strategy helped Mexico become self-sufficient in iron, steel, and oil by 1964. This economic growth caused an increase in population and a need for better social conditions.

Social factors played a major role in the middle class growth during this period. Education, which had always been a privilege for the wealthy, became even more accessible during the sixties. In 1963, education became the largest single item on the Mexican budget. As the number of high schools doubled between 1940 and 1960, so did the value of education among the middle class. By 1964, public health campaigns had drastically reduced polio and tuberculosis rates. This caused a reduction in infant mortality, longer life spans, and massive population growth. These factors and others benefitted and improved the lives of the urban middle class during the sixties.

As the middle class grew, the PRI had no choice but to accommodate their needs. Over a fifty-year span, Mexico’s urban population grew from 29.3 percent in 1910 to 50.7 percent during the sixties. For the first time the urban population surpassed the rural population. Even more significant, the middle class percentage nearly doubled from 16 percent to 29 percent from 1910 to the end of the sixties. This shift forced Mexico to begin investing in public housing construction in cities. Large modern apartment complexes began to surface in Mexico City with luxuries such as parking, kitchen appliances, and even carpeting. Other luxuries such as entertainment and shopping complexes also began to spring up. The middle class now had access to US imports such as appliances, clothes, and electronics. In 1962, Mexico nationalized electricity by purchasing electric companies from Canada and the US. It also purchased its own motion picture industry from the US in order to make this luxury accessible to everyone. These luxuries and many other privileges were a reflection of Mexico’s economic growth.

However, this elusive growth during the sixties was temporary and only beneficial for the growing middle class. Most people in rural Mexico did not experience or benefit from the economic growth or modern advancements. Corridos portray a different Mexico during this time. While they tend to mention the growth and prosperity, it is usually to describe the benefits that rural communities are lacking. During the sixties, campesinos experienced a Mexico far different than the middle class. The Mexico they lived in took their land, deprived them of basic commodities, and ignored their pleas.

Campesino Movements in the Sixties

Despite playing a vital role in Mexican society, campesinos have been marginalized for most of their history. They are most often stereotyped by urban and wealthy people as poor, backwards, and uneducated. While much has been done to change this, the views perpetuated by non-campesinos have not changed. Campesinos have lived a very simple and collectivistic traditional lifestyle. They cultivated the land to eat and sold the surplus to make ends meet. But campesinos also lacked adequate resources such as clean water, electricity, and a decent education. For instance, during the sixties it is estimated there were about 13.2 million people who could neither read nor write. The fact that many campesinos are illiterate presented many obstacles for them. Aside from being seen and treated as second-class citizens by the government, many of their rights were also violated.

The lack of an adequate education proved to be a major problem for the lives of the campesinos during the sixties. By not having knowledge of their written legal rights, campesinos were constantly being deceived by the government. They did not receive the rights that all Mexican citizens were entitled to and lacked the essential commodities that the urban population benefitted from. Being illiterate also prevented campesinos from being aware

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22 Walker, Waking from the Dream, p. Intro.
23 Walker, Waking from the Dream, p. 6-7
26 Walker, Waking from the Dream, p. 3.
28 Meyer, Sherman, and Deeds, Course of Mexican History, p. 629.
of the current issues going on in Mexico. For instance, many campesinos could not read newspapers, if they even had access to them at all. By not being able to read newspapers, legal documents or land holdings, they were often unaware of their rights and lacked a political voice during local elections. The corrupt political representation they received did not reflect their views and needs.

An unfortunate historical disadvantage is the absence of written records by campesinos. The history of Mexico often lacks the voices and accounts of campesinos themselves. Much of the written history of campesinos comes from legal documents or statistics. This is where corridos play a vital role in recounting the history of campesinos; they provide oral accounts of their lives. These oral accounts portray the emotions and adversities that many campesinos throughout Mexico experienced during the sixties.

Corridos help to rediscover the voices of rural communities that have been absent. These voices are often overshadowed by larger historical events. It is possible to use corridos to depict the experiences, emotions, and events of campesinos that would otherwise be left out of history. Corridos demonstrate the concerns and displeasures of rural areas, which often times were similar in most rural communities throughout Mexico. Corridos not only portray the oppressions and displeasures of rural Mexicans, but they also tell of their joys, celebrations, and triumphs, such as gaining land, holidays, honoring a hero, or gaining rights. They helped to bind distant rural communities who often shared the same experiences. This became important because corridos helped build a sense of nationalism and at the same time empower campesinos to rise and demand equal rights.

In the corrido, “Corrido de Santo Domingo,” the corridista Judith Reyes, depicts a movement led by campesinos in Santo Domingo, Chihuahua. The campesinos have been forcibly displaced from their land and as a result are now struggling for food. The movement, which is led by Sánchez Lozoya, demands for the governor of Chihuahua to treat campesinos lawfully and fairly, and to return them to their land. In order to seek justice, Lozoya leads a group of campesinos to invade a hacienda, which is owned by a large landholder in Santo Domingo. The state government sides with the landholder and sends the army to confront and disperse the campesinos. The defiant campesinos, comprised of men, women, elders, and about three hundred children, are prepared to confront the army in a physical struggle. The troops succeed and the discouraged campesinos are forced to retreat. Fortunately, the desperate and hungry campesinos receive food from a nearby town that supports Santo Domingo in their plight. After the defeat, the campesinos then decide to directly accost the governor in hopes of receiving aid. He responds by once again dispatching the army to physically suppress them. The government’s solution to ease the disgruntled campesinos is to offer them bracero visas. However, many campesinos, including Lozoya reject the visas to go work in Texas.

The campesinos of Santo Domingo are representative of most campesino communities throughout Mexico during the sixties. This assertion comes from the multiple similarities found in numerous corridos, such as land reform, lacking commodities, and organizing to demand rights. Many of the rural movements that arose during the sixties came about because of injustices committed unto campesinos. These injustices ranged from exploitation, to not having enough land to produce enough food. When campesinos became fed up with their oppressors, they organized, made demands, and in extreme cases, used violence to seek justice. As the corrido in Santo Domingo demonstrates, the people in charge often responded with violence, even when the campesinos attempted a peaceful resolution. However, the fact that campesinos are willing to engage in a physical struggle for their rights proves their determination. The determination expressed in the corrido is not limited to men but all campesinos, including women and children. Regardless of their determination, the campesinos did not always achieve victory as seen in Santo Domingo. However, their fortitude brings support from neighboring campesinos that empathized with their struggle. The support demonstrates the strong identity and camaraderie that is built among campesinos throughout Mexico. The campesinos in Santo Domingo had built such a strong sense of identity and solidarity that they turned down the visas offered to them by the governor. The corrido makes a strong assertion that campesinos are content with who they are and their lifestyle. They do not want to give up their land and migrate north to cultivate somebody else’s land.

Similar corridos throughout Mexico depict similar conditions among campesinos. For example, in the “Corrido de Rubén Jaramillo,” the campesinos land in Morelos is being stripped from them. In response, Jaramillo leads a movement and educates campesinos on their rights to own land. Jaramillo’s efforts were successful, and soon

31 Large landholdings or estate
32 A visa for Mexican migrant workers
campesinos were mobilizing to demand their basic rights and land. In 1962, the governor of Morelos sends some soldiers disguised as campesinos to assassinate Jaramillo. In the middle of the night, Jaramillo is ambushed and he and his family are killed. Just like in Santo Domingo, the governor of Morelos uses the army and assassinates Jaramillo to suppress the campesino’s movements.

The “Corrido of Santo Domingo” and other corridos portray a different Mexico in the sixties. Campesinos witnessed this Mexico because of their personal experiences. Their needs and priorities, which were concealed by the PRI, were clearly heard but ignored throughout multiple corridos. Their struggle for rights, basic commodities and land is common. The economically stable Mexico in the sixties is only stable for a small population and in certain areas. Campesinos were only further exploited as the country grew and more land was needed for expansion. The rich got richer at the expense of the poor and soon other marginalized groups would rise to uncover these injustices.

**Student Movements in the Sixties**

Another group that rose up to defend their rights and the rights of others during the sixties were students. Students began to rise up in the summer of 1968 and take part in political movements around the world and in Latin American cities like Rio de Janeiro, Buenos Aires, Montevideo, and Mexico City. In 1968, students rose up in Mexico City to defend their autonomous university, protest the Olympics, and protect their rights as students. The government put an end to the movement by massacring hundreds of students on October 2, 1968, at the Plaza de las Tres Culturas in the District of Tlatelolco. The government tried to cover up the violent confrontations and the number of people massacred. They failed to conceal the movement from the world and questions were raised about Mexico’s status as a modern nation. As the movement gained worldwide attention the inequalities and poverty in Mexico became apparent. The student’s efforts had spread awareness and uncovered the real issues facing Mexico.

Anybody familiar with Mexico’s history has heard of the 1968 student movement in Mexico City. However, two years prior to the 1968 movement a similar movement took place in Durango, Mexico. In 1966, students from the Instituto Tecnologico de Durango, Universidad Juarez in Durango, and other universities initiated a movement to stop the foreign and domestic exploitation of one of the most profitable mines in Durango. The movement began with students but soon people from all over the state of Durango took part. The movement was a success and foreign investors were pushed out. Although this movement is important because it united Durango for a common goal, it is not well known.

In 1966, a series of corridos were written about the student movements in Durango; they were composed by students, professors, and campesinos. Antonio Avitia Hernandez compiled many of these corridos in a book titled, *Corridos de Durango*. In them, the corridistas depict the motives for the movement and the emotions of the disgruntled students and people who were against the exploiters. Salvador Castañon, one of the corridistas, portrays the perspective of rural campesinos that also took part in the movement. While the movement was student led, many other people in Durango joined in. The students were successful and they drove the foreign exploiters out of Durango.

Many corridos demonstrate a strong solidarity built among people fighting for similar causes. In the corrido, “Corrido al Estudiantado,” students in 1966 initiate a movement to clear the Cerro Mercado of foreign exploiters. Castañon, states that the students are “tired of suffering” and this engenders a demonstration to take place. As the movement progresses more people in Durango become involved and join the students in solidarity. While clearing out the Cerro Mercado, students and supporters began to chant. “We are seeking justice,” their disgruntled voices echoed, directed at the governor of Durango. The corridista proclaims that everyone in Durango is in favor of the movement, and they are proud of the student’s efforts. He also goes on to state that Durangueños are fed up with deceptions and false promises made by the governor.

A major cause of the movement, according to the corrido, is the amount of metals being extracted from the Cerro Mercado and exported to Monterrey by a Spanish mining company. The people in Durango receive no profit or benefit from the exportation in any way. Castañon makes an interesting comparison by referring to the foreign
exploiters as gachupines.\textsuperscript{37} This reference is a small reminder of how the old colonial power was still exploiting Mexico by extracting minerals. The Spanish were importing workers and heavy machinery to extract these precious metals from the mine. As Durangueños began to clear the Cerro Mercado they proclaim that foreigners will no longer take any metals from their mines. Castañon, states that while Durangueños may be thought of as “ignorant,” they are aware of the law and their rights.

The corrido is of historical significance in that it depicts a strong sense of nationalism by students and campesinos. The metals being extracted are described as being national goods and not for the benefit of foreign exploiters. Castañon refers to the mine as being part of the nation, and the nation is not for sale. He further claims that Mexico has many riches, like the Cerro Mercado, but the wealth is being robbed from Durangueños, and as a result, they are going hungry. Castañon also refers to Carlos Prieto, one of the main beneficiaries of the mine, who is accused of bribing the media for many years to conceal the exploitation. The corrido states that Durangueños are fed up with Prieto and foreign capitalists who take what is not theirs. Towards the end of the corrido, Castañon references Durangueños as “angry scorpions” who had awakened to break the foreign chains that had confined and exploited the Cerro Mercado since the 1920s.

The 1966 student movement in Durango gained support from all disgruntled Durangueños. Perhaps the reason it gained support is because everyone involved could voice their concerns and demonstrate their displeasures with the government. Nevertheless, the student movement in Durango would lead to the much larger demonstration in Mexico City in 1968. But unlike the student demonstration in Durango, campesinos were practically absent from that student demonstration. However, prior to these larger student movements, a corrido in 1965 describes a group of students and campesinos rising to attack a small military base in Ciudad Madera, Chihuahua. Arturo Gámiz, a professor and Pablo Gómez, a doctor led the small agitated group whose rights to adequate schools and landholdings were being denied. After years of unsuccessful peaceful demands Gámiz and Gómez attempt a violent struggle.\textsuperscript{38} Unfortunately, the attack left both leaders dead, but others would continue the struggle.

Awareness of student movements during the sixties is widespread throughout different means, including corridos. This proves to be significant because by using corridos students are able to reach campesinos, who would join or at least become aware of the struggle. Aside from the 1968 Mexico City student movement, many of the other movements that corridos depict during the sixties are often unheard of. The joint efforts demonstrated through corridos, of both campesinos and students, suggest their shared values, need for social justice, and strong sense of nationalism. Yet, even more important, the corridos that were used to depict and spread the news about the movements are now sources that can be used to recount student movements in the sixties. The evidence that corridos provide on student movements in Mexico proves to be another example of how corridos should be utilized as primary sources to learn and complement larger historical work.

**Conclusion**

We don’t want more promises
Nor a catrinian demagogy;
If this is handled with bullets
I have my carbine ready.

- Judith Reyes\textsuperscript{39}

Judith Reyes concludes the corrido, “Los Rebeldes,” by asserting that campesinos are ready to rise and fight. They don’t want any more promises or deceptions from the government. The same view is portrayed with strong sentiments through numerous other corridos. All across Mexico, campesinos and students are prepared to organize and protest the injustices imposed on them. This is not limited to men, but women, children, and the elderly are ready as well. During the sixties rural campesinos are awakening from a passive and idle stage. For the marginalized, corridos demonstrate the struggles, political injustices, protests and movements, and violence. But most importantly, they portray their lifestyles and perseverance to defy and to overcome the lack of resources and systematic oppressions.

\textsuperscript{37} Refers to a native Spaniard who exploited Mexico
For Mexico, the sixties was a period of growth and change, of wealth and poverty, and of resistance and mobilization. The PRI’s attempt to modernize Mexico may have worked for a period in urban areas, but only for a few and to an extent. When the economic growth began to decline in the late sixties the illusions of a first world Mexico began to disappear. Corridistas throughout the sixties were writing and singing the voices of people who were mobilizing to expose this elusive Mexico. In rural Mexico, campesinos were participating in protests to demand land and the basic human rights they were entitled to. Students on the other hand were organizing in rural and urban areas to expose the extortions of the PRI. Yet, both groups would sometimes mobilize together to fight the same struggle. Sometimes they were met with resistance and in some cases even violence. Regardless, both groups were persistent and defiant in advocating for themselves and others. If they were to keep their land and receive basic amenities, stop government coercion, and gain a voice, they would have to, as Reyes puts it, be ready with their “carbines.” Campesinos had been marginalized and their rights had been denied for far too long; their struggles were portrayed and could be heard through corridos, but the people in power were not listening.

The voices that corridos project during the sixties are numerous and diverse. They extend from southern to northern Mexico and from rural to some urban areas. They depict the lives of men, women, and children from all ages and all occupations. Some corridos were recorded and performed to large audiences while others were only sold in markets as music sheets. The voices and stories of people, or as Hernandez describes them, “loose and scattered threads,” can be stitched together to sew a history that will fill gaps in larger broader histories. For example, in 1962 a corrido titled, “Coronel Bravo Carpinteyro,”40 recounts the violence and disorder in Nuevo Leon, Monterrey. The corridista describes a chaotic scene where people in Nuevo Leon disrespect the law and consider themselves above it. Bravo, a colonel in the Mexican army, arrives to establish order in Nuevo Leon and a violent gunfight erupts. After the violent confrontation order is restored and Bravo is hailed as a hero. Another example is a corrido in 1968, “Creciente del Nazas,”41 which describes the cyclone, Naomi, as it whirls with rain for three days in Durango Mexico, causing the Naza River to overflow and flood three towns. The damages were severe and many people lost their homes. The disaster occurred while most of Mexico’s attention was on the 1968 Mexico City student movement and the upcoming Olympics. The government’s preoccupations with other matters provided no support for the people affected by the cyclone. Corridos like these are able to depict the lives of people and provide glimpses of the history throughout Mexico.

The traditional corridos began to fade as the transition into a modern society pushed them further into rural areas. The emergence of Rock also introduced a more appealing political form of music that reached a younger and larger mainstream audience. The voices of corridos began to change after the sixties. They now began to portray a narcotic world full of violence and cartels. The voices of campesinos slowly began to disappear from corridos. However, during this time, as more people began to migrate north, corridos began to emerge in the United States. Migrant farm workers began finding a sort of nostalgia in corridos and they began utilizing them to depict their migrant experiences. Perhaps corridos are so imbedded in the campesino identity that even in foreign land the music resonates. Nevertheless, corridos would preserve the voices of campesinos throughout Mexico. Their stories would remain written on music sheets and their voices are still heard today.

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40 Anexo II, Corridos de Nuevo Leon, p. 139.
References


Will a New Input Strategy Be Warranted in Non-Irrigated Corn Production under Global Climate Change? An Analysis Using Corn Production in the Midwestern United States

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Abstract
Incentives to delay agricultural inputs to increase output and protect against climate change and weather related risk are explored. When producer decision making in non-irrigated production in an environment of weather uncertainty is outlined an incentive is found when imperfect information and risk is present. The EPIC crop simulator is then used to assess the yield impact of fertilizer delaying in the non-irrigated corn component of corn-soybean rotations in Humboldt and Webster Counties, Iowa. Assessed in conjunction with disaster frequency data, crop simulations suggest optimal input timing to be six weeks or more after planting. Additional production considerations such as spring field conditions and fertilizer runoff also support a six week or later input delay strategy. This result held under both recent weather conditions and climate change projections through 2040. The strength of each component’s influence on the input delaying decision changes however. Disaster frequency, field conditions, and runoff considerations all increase the incentive to delay fertilizer inputs while the risk associated with yield loss from delaying fertilizer beyond the six week mark also increases while the increase in yield benefits decreases relative to recent conditions. Methods to incentivize adoption of delayed input practices are briefly outlined such as modification of the farm bill’s multi-peril crop insurance program while being reserved for greater discussion in later research on the soy side of corn-soybean rotations.

Introduction
This research analyzes decision making and methods of risk mitigation in agricultural environments containing uncertainty. The environment of analysis is non-irrigated corn production in two major corn producing counties in Iowa where risks come in many forms, weather being foremost. Adding further to volatility, the region is undergoing unprecedented climate change, which changes the risks associated with productivity in ways impossible to fully predict. This investigation follows a specific progression: 1) Provide a framework for decision making in agricultural environments of uncertainty, attuned to the practices of agricultural production. 2) Establish a climate change risk mitigation strategy based on the developed framework. 3) Consider management practices in the agricultural environment that may be used to implement strategies. 4) Test implications of alternative choices using crop simulation tools. 5) Suggest strategies within existing policy framework to incentivize alternative management practices. Implementation of this analytical framework using a realistic production scenario produces results applicable in the specific case chosen while presenting a framework for risk mitigation strategy development in non-irrigated production environments undergoing climate change in general.

First, this paper frames the research question in the decision making environment being analyzed. The incentives faced by non-irrigated corn producers are considered. Disaster declaration frequency in Iowa is used to roughly approximate the warranted delay in production input timing to minimize risk in a repetitive production environment. A crop simulation model is then used to assess the effects on yield and profit of potential risk reducing input delay strategies. Simulations are conducted under both recent weather conditions and projections of

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a downscaled climate model through 2040. Additional effects on the production environment and producer behavior are then considered using data on field conditions, agricultural input prices, and environmental impacts. Finally, adjustments to crop insurance policies are briefly considered to incentivize adoption of risk reduction strategies in the U.S. production environment. Such strategies will be explored in greater detail in later work. The findings from this endeavor suggest a mix of incentives and disincentives exist for delayed input strategies. The crop simulator and decision making matrix used identify incentives from increased average yield as well as reduced disaster susceptibility. The variability in yield, however, is projected to increase under future growing conditions when a delayed input strategy is used. Thus, willingness of producers to attempt such changes in farm management will be highly dependent on tastes and preferences. Specific, temporary agricultural policies could help overcome such change and risk aversion, allowing producers to explore these results in their farm specific context.

Background

Climate change mitigation or adaption is also especially important in developing economies where agricultural production is a critical component. However, United States non-irrigated corn production was chosen due to greater availability of data. Corn production in Iowa, America’s top corn producing state, was chosen. Iowa corn producers contribute 17% to national production (USDA NASS, 2013) and have a remarkable impact not just on local economies, but also nationally across industries. Corn is perhaps the most pervasive production input in the U.S. due to its use in many forms in numerous foods, livestock feed, nonfood products, and use as a fuel additive. Due to this pervasiveness of a single commodity, at least some part of every dollar spent in the U.S. economy goes toward the price of corn production. Beyond price, the alarming reliance on a single commodity, which is increasing globally, compels research into safeguarding and optimization of production.

Our top corn producing state is undergoing unprecedented changes (Iowa Climate Change Impacts Committee, 2012) in temperature, precipitation, and frequency of extreme weather events, continuing a trend of change begun several decades ago. The changing climate will impact agricultural producers, altering their production choices and potentially changing management practices. Non-irrigated corn producers have generally applied fertilizer at planting due to concerns of irreparable yield loss from nitrogen deficiency if applied later. However, climate change related risk compels review of this input decision. Some agronomical field research suggests potential yield gains from delaying fertilizer under certain conditions, the benefit of such a delay may increase as the climate changes. A number of other potential benefits to delaying application are stated in the agricultural literature: avoiding wet spring field conditions, labor demand smoothing, reduced water pollution from fertilizer runoff, and increased availability of information about weather and likelihood of a successful growing season.

Literature Review

To begin, a discussion of the literature on effects of extreme weather events and climate change on non-irrigated production as well as input timing on corn must be discussed. A good place to begin is the journal article that inspired this research, Magnan, Lybbert, Mrabet, and Fadlaoui’s The quasi-option value of delayed input use under catastrophic drought risk: The case of no-till in Morocco (2011). In this article, a new farming practice (no-till) was compared to traditional farming practices under the circumstances of increased drought occurrence in Morocco. The motivating factor is climate change induced increases in drought probability, from one in eight years, to one in two years in the research area. This led to a discussion of whether it would be in the best interests of farmers to adopt practices allowing them to delay inputs until later in the season. Presumably, at a later date more will be known about the likelihood of drought for instance, a point in time after the first and critical early season rains should have occurred. Their analysis of a change in practice to no-till agriculture began under current, already adverse conditions, and then proceeded into a climate change scenario with further increases in drought probability. The result was that delaying inputs through no-till caused a small loss under current conditions because of the author’s assumption in the model of no-till being less productive than traditional tillage due to lack of farmer experience. Under increasing drought probability, a small benefit is indicated in the scenario outlined. The author’s method is based on only one possible in season input option, leaving room for improvement through the use of a crop simulation model to assess the effects of all potential input points on yield.

Cherkauer and Mishra (2010) explore two relevant hypotheses, first that their area of interest became wetter during the last several decades, and second, that drought during different plant growth periods of corn and soybeans has different impacts on yield. It was found, agreeing with prior research such as Shaw (1988), drought
during silking and grain fill is more devastating for corn production, followed by moisture stress in the 30 days prior to silking. Earlier droughts, if mild, have little impact on yields and thus season success. Their research correlates impacts of a limited number of different factors on corn production, something that can be expanded on through use of a crop simulation model such as the Environmental Policy Integrated Climate (EPIC) model. Unfortunately, based on this research producers would have to delay inputs until late in the production cycle to avoid application in years where the crop is lost from extended droughts. This would entail significant yield reductions in non-drought years according to section five of my research.

What is the expected climate change in the central Iowa research area? One issue with applying climate change predictions on a small geographic scale is the abundance of competing climate models, emission predictions, and methods of downscaling of data. However, a report from the Environmental Protection Agency regarding climate change specific to Iowa and a statement by 138 leading scientific research faculty and staff representing 27 Iowa colleges and universities gives a rough overview (EPA, 2011; Iowa Climate Statement, 2012). According to these sources, Iowa's climate has become increasingly warm over the last three decades and is expected to continue to warm 2.5-7.2 degrees Fahrenheit on average in the future. Further, Iowa is expected to become wetter in addition to warmer, asymmetrically throughout the year and more extreme weather events, i.e. complete soil saturation and flashing flooding, stifling heat waves, and devastating droughts are likely to occur. Nearly all additional rainfall is expected early in the growing season while less rain is expected mid-season. Weather extremes are the kind of events my research is intended to account for in decision making and find policies to mitigate, whether inhibitive soil saturation and flooding or lack of rainfall to support production.

Scharf, Wiebold, and Lory (2002) discuss possible benefits and yield losses of delaying nitrogen in non-irrigated corn production, providing a significant overview of the literature relating to nitrogen timing. They found little to no loss, and sometimes even an increase in yields from delaying nitrogen in non-irrigated corn production. They also mention a number of additional benefits to input delaying such as labor demand smoothing by shifting it to slower periods in the season, reduced fertilizer runoff, and more precise fertilizer need assessment. The authors, however, do not attempt to quantify the additional benefits to delaying of nitrogen application. Using the vegetative state scale where V1 represents emergence of the first leaf on corn stalks and V20 signifies when all leaves have emerged and silking has begun, it was found in numerous agronomy field experiments that nitrogen can be delayed well into the season with no loss or even a small gain until the V11 stage and only a little yield loss (<3%) until V16. The loss from V16-V20 is significant, however, suggesting a decision point at V11 or V16 for fertilizer application if a risk reducing delayed application strategy is used. Scharf, Wiebold, and Lory’s findings sharply contrast with the reportedly commonly held belief among farmers that irreversible yield loss will occur if nitrogen application is delayed.

The literature on pesticide/herbicide/fungicide application, however, finds application of defensive expenditures cannot be delayed until much later in the season. Carey & Kells (1995) and Tharp & Kells (1999) provide evidence such defensive expenditures cannot be delayed beyond growth stage V4, approximately 4-5 weeks into the Iowa growing season, or corn crops face catastrophic loss from resource competition and damage, as it was found that weed growth can be modelled exponentially. And so in section four of this research, herbicide, fungicide, and pesticide defensive applications will be considered part of the initial input package in period one.

A number of sources discuss the effects of adjusting one, a pair of inputs, or drought/moisture stress in agronomy experiments. However, as changes in each input impact crop response to other inputs, research on impacts of climate change, coupled with changes in inputs, must utilize crop simulation models that account for multiple changes in factors. To put the issue in perspective, moisture stress impacts yield to different extents during different periods of corn production. Drought during silking and grain fill are most significant, but moisture stress within the 30 days prior also has significant, though different yield reducing impacts. According to Shaw (1988), a recognized expert on corn production and agronomy in Iowa, moisture stress days in the pre-silking period result in an approximately 2.9% reduction in yield per day of moisture stress. In contrast, volume of rainfall, in addition to endangering crops at extremes, effects rates of plant growth directly as well as the rate of fertilizer loss through runoff. The interaction of all other inputs and changes in production parameters must be considered. The most important input after water availability is nitrogen fertilizer. When rainfall is ideal, fertilizer is the strongest indicator of yield. But during significant drought years, fertilizer cannot preserve yield and total crop loss can still occur. During mild drought years, the role of fertilizer is less consistent. Further, when fertilizer and rainfall are ideal, the limiting issue then is temperature. Both low and high temperatures are detrimental to production and effect yield to different degrees depending on other factors. Each of these factors and many others interact, effecting yields in different ways depending on the set and timing of production factors present each season.
Decision-Making in Agriculture with Production Uncertainty

This discussion of climate change mitigation strategies relies on an analysis of likely outcomes from delaying agricultural inputs. First, producer decision making for risk reduction in a climate of uncertainty is discussed while the local disaster record is used to ascertain a first approximation of optimal risk reducing input timing. Then, an agricultural production simulation is conducted to assess the effect on yield. And finally, an exploration of additional impacts on production and the environment are explored.

Decision making obviously varies substantially with context. In a neoclassical profit maximizing, perfect information environment producers would know at the beginning of a year whether the crop will be successful and how to produce maximum yields with the inputs available. It isn’t the case, however, that agricultural producers hold perfect information or anything even close or are even necessarily profit maximizers. In this discussion of producer decision making, both neoclassical assumptions are modified. Profit maximization in agriculture should entail choosing the crops and production methods that maximize profit. In this model it is instead assumed agricultural producers choose to produce a specific crop. In the EPIC simulation that follows corn is chosen as part of corn-soybean biennial rotations, regardless of other crop options available. This is a minor point for most of the analysis, simply reducing the variables by one, the crop. In contrast, modification of the perfect information assumption has major implications. Infusion of risk into production places a burden on producers to consider input choices that may trade yield in individual years for risk reduction across a lifetime of production. A decision making matrix is developed in section four within this context of imperfect information and yield maximization constrained by the presence of risk.

The price of corn reflects the costs of production, risk, and global supply and demand. Global supply and demand are outside the confines of this paper. The simplified model presented holds corn producers as corn producers, regardless of such influences. Costs of production, heavily influenced by a number of external factors such as input demands across agriculture, is also effected by risk at the farm level when viewed from a multiyear perspective. In an individual year, the cost of production is determined by the cost of inputs. Yet in multiyear production, the cost is the price of initial inputs, any reapplications necessary due to weather and pest induced losses, and the cost in yield of those losses. Consider a scenario where, shortly after seed planting and application of fertilizers, herbicides, pesticides, and applicable labor, strong downpours lead to flooding and a total loss of all inputs. If the afflicted farmer replants the crop that year, the cost of production would be two times the seed, fertilizer, herbicide, pesticide, and applicable labor necessary to produce one season’s crop. While some inputs cannot rationally be delayed, yield is heavily dependent on optimal planting timing (Farnham, 2001), and herbicide deferral allows exponential growth in resource competing weeds (Carey & Kells, 1995; Tharp & Kells, 1999). Other inputs such as fertilizer show promise as loss reducers through delayed application. In this section, the rationale for delaying agricultural inputs is presented through a discussion of decision making in agricultural environments containing uncertainty.

Decision-making on input timing when faced with risk

Naturally a farmer makes a profit, breaks even, or experiences a loss from production in a season. The breakeven point is where gross income meets cost, but this says nothing about how the costs and decisions are distributed within a season. Regardless of how the farmer distributes cost, the producer’s goal within the given parameters is to maximize profit, which is the remainder after price multiplied by yield per acre \( PQ \) has subtracted a cost function \( C \), which includes land \( L \), seed \( S \), fertilizers \( F \), defensive expenditures on pesticides, herbicides, fungicides \( D \), harvest & postseason costs (generally referred to here as harvest, \( H \)), and labor divided into associated tasks such that \( L_L, L_S, L_F, L_D, \) and \( L_H \) respectively. To ensure comparability between farms, the total profit function of a farmer, where \( N \) represents the number of acres, can be considered on a per acre basis in a homogenous field environment. For simplicity, labor costs include the costs of equipment used in conjunction with that labor. The total profit function for a farmer using traditional tillage \( T \) is

\[
\pi_T = N \{ PQ - C \{ L(L, L_L) + S(S, S_S) + F(F, F_F) + D(D, D_D) + H(H, H_H) \} \} \\
\]

and per acre, it simplifies to

\[
\pi = PQ - C \{ L(L, L_L) + S(S, S_S) + F(F, F_F) + D(D, D_D) + H(H, H_H) \} \\
\]

The farmer’s profit possibilities are well known
Profit if \( PQ > C \) \hspace{1cm} (1.3)
Break even if \( PQ = C \) \hspace{1cm} (1.4)
Loss if \( PQ < C \) \hspace{1cm} (1.5)

Farmers do not know what \( P \) or \( Q \) will be at the start of a season but are assumed to know what input costs are as they can purchase inputs at this point. In reality, farmers can secure price through contracts, though it may not necessarily be advantageous to do so. This model considers rainfed, non-irrigated production and while \( P \) is determined by the market which considers both irrigated and non-irrigated corn production, \( Q \) is heavily dependent on weather encountered by the individual farmer. Dryland producers are at a disadvantage to irrigated farmers who have greater control over expected yield and can aim for optimal moisture provision, though they too will be affected by flooding, extended droughts, and other extreme weather events. And so, over a number of years, non-irrigated producers will have lower average yields and less profit within an area than irrigated neighbors. If \( P \) takes into account production and losses of yield across the market, it will under-compensate for losses to non-irrigated producers and over-compensate irrigated producers in any year with extreme weather events. While irrigating farmers can expect more consistent yields through partial control of moisture, dryland producers have little predictability in what year a drought or flood will occur. But in both cases, as the growing season progresses, knowledge on weather, yield probability, and market price at harvest improve. A number of other underlying assumptions in this model are made explicit in appendix A.

There are four major input decision scenarios possible, two under traditional tillage (\( T \)) and two under no-till (\( NT \)) production. Under each tillage decision, there are two scenarios, one where the farmer makes the decision on all inputs and applies them at the earliest point, planting, and one where the farmer applies minimal inputs at planting and has a second input decision at a later stage in the production process similar to Magnan, Lybbert, Mrabet, and Fadlaoui’s (2011) treatment. A less interesting decision also exists at harvest (\( IH \)). Because till versus no-till is not a significant cost issue in the U.S., unlike Morocco and much of the developing world where it is a major consideration, no-till is included in appendix B while the body of this paper focuses on traditional tillage agriculture. In the U.S., significant mechanization (part of \( L \) in the model) makes the till versus no-till cost difference minor compared to developing economies where less mechanization occurs and so this paper instead considers changes in fertilizer timing and related expenditures due to their significant usage and cost in the U.S. The no-till case, however, leads to some interesting conclusions as well on its effectiveness in climate change mitigation in the developing versus developed world. As such, readers with an interest in developing economies are especially encouraged to compare this section’s decision making matrix to appendix B.

Under \( T \) any farmer conducting non-irrigated production decides to plant each acre if \( P_e \) and \( Q_e \) multiply to exceed costs of production
\[
P_e Q_e > C(L, S, F, D, H) \hspace{1cm} (2.1)
\]
However, the timing a farmer introduces inputs \( L, S, F, D, H \) is significant. For a traditional farmer, the expected profit function at planting is
\[
\pi_e = P_e Q_e - I_T(L, S, F, D) - I_H(H) \hspace{1cm} (2.2)
\]
In equation 2.2, the farmer provides all production inputs at seeding, and the only other input decision is harvest when the farmer can decide if the crop produced is worth harvesting. Under normal and mild water stress conditions the answer to the \( I_H \) decision is affirmative. The only time a farmer would decide not to harvest at \( I_H \) is if
\[
P_e Q_e < I_H \hspace{1cm} (2.3)
\]
Interpreted, this would be a circumstance of catastrophic, complete loss (\( Q_e \) or \( P_e \approx 0 \)) and no mitigating income can be gained from what is available on the field. So under all but complete crop failure, the traditional decision making farmer faces the entire input decision at planting when the least information is known such that
\[
\pi_e = P_e Q_e - C(L, S, F, D, H) \hspace{1cm} (2.4)
\]
By equation 2.4, the farmer has no control over profitability after planting and is reliant on an increasingly unpredictable climate. In comparison, a farmer who divides inputs into two decision points, plus the decision to harvest, has greater control over loss mitigation and thus profitability when struck with adverse conditions. Such a producer has the profit function
\[ \pi_e = P_e Q_e - I_1 (L, S, D) - I_2 (F) - l_H (H) \]  
(2.5)

Again, except under total loss the harvest decision is positive and the function becomes

\[ \pi_e = P_e Q_e - I_1 (L, S, D) - I_2 (F, H) \]  
(2.6)

At \( I_2 \) more is known about the condition of the crop and season and a more accurate decision can be made on the value of continuing the season’s production. A farmer producing per equation (2.5) or (2.6) can enjoy delaying significant costs until later in the season. At decision point \( I_2 \) the farmer’s decision is

- profit expected, continue production \( P_e Q_e - I_1 > I_2 \)  
- break even, indifferent \( P_e Q_e - I_1 = I_2 \)  
- additional inputs result in greater loss, go on vacation \( P_e Q_e - I_1 < I_2 \)  

In a year where \( P, Q, \) and \( C \) are favorable, the traditional farmer and the input delaying farmer face the same costs and profits. But in comparing equations (2.4) and (2.6) in light of equations (2.7) through (2.9), the losses in meteorologically poor production years differ significantly with different input strategies.

In an adverse weather year, traditional farmers lose

\[ -\pi = C (L, S, F, D, H) - PQ \]  
(2.10)

or in a total loss year lose

\[ -\pi = C (L, S, F, D) \]  
(2.11)

In an adverse weather year, two-decision farmers lose

\[ -\pi = C (L, S, F, D, H) - PQ \]  
(2.12)

or in a total loss year lose

\[ -\pi = C (L, S, D) \]  
(2.13)

Taking the decision to produce further requires data on prices, operating costs, and more troublesome risk in an area. An assessment of the Iowa disaster record is used for a first approximation of whether an adjustment to input timing is warranted when risk is included in the agricultural decision process. A six week fertilizer input delay after planting is suggested for optimal yields per the next section of this research. This would entail fertilizer application around June 6th if the optimal planting date for the area of April 25th is used. This would allow reductions in losses in years with catastrophic events occurring from the last week of April through the first week of June, a time period corresponding with the highest disaster declaration frequency as in figure 1. Given the current price of fertilizer (Duffy, 2013), each acre where fertilizer is not applied and the crop subsequently lost, leads to a savings of $105-$135. For a producer experiencing the same extreme weather events but applying fertilizer at planting, the additional loss will be borne by the producer, crop insurer and ultimately by consumers. While delays until the yield optimizing six week mark remove some risk, it may be worthwhile to consider further delays in input commitment based on specific price and markets in each production year.
Limitations

The most significant limitation is scale of data on loss events. Drought is comparatively consistent in an area compared to flooding, tornados, and hail. Comparisons of county yields to declared disasters show a number of mismatched years. The effects of flooding in 1993 and 2010 are clear in Humboldt County and Webster County yields while the effects of other events are not. Next, many losses are not handled by disaster declaration. A thorough analysis of both crop insurance payouts and disaster data would certainly add to such a discussion. This would, however, be misdirected at the county or larger scale. Many events effect producers differently across a county, for instance flooding will be highly dependent on field location. But in general, disaster declaration data suggests risk is greater during the May-July portion of Iowa’s production season.

EPIC Agronomical Simulation

To explore changes in optimum yield timing with changes in climate, the EPIC model is used to build on the preceding decision making matrix. EPIC is a process based crop simulator meeting the need for a model that simultaneously considers multiple parameters and their interactions as changes occur. It also has an extensive history of successful implementation in the agricultural literature. Here EPIC is calibrated to represent farms and production practices in Humboldt County and Webster County, Iowa. While historical daily weather data is used during a validation period, 1990-2010, spatially and temporally downscaled weather projections from the CSIRO Mk3 Climate System Model are used to represent the period 2011-2040. To explore the effects of input timing on yield, repeated simulations are conducted with fertilizer applied at different points within production seasons. The effect of input timing on yield is compared under the recent historical weather record to the projected climate of 2011-2040. Beginning four weeks prior to planting, fertilizer application is simulated at two week intervals through the twentieth week after planting. The subsequent fertilizer dependent yield curves demonstrate how yield is affected by fertilizer application on average. Comparison of the fertilizer input timing curves for the period 1990-2010 to 2011-2040 demonstrates how climate change affects yield maximizing incentives in the crop selected for analysis.

The objective of this component is to identify optimal input timing and the tradeoff with delaying input decisions in non-irrigated corn production under present conditions, and then to assess how optimality and the tradeoff will differ with climate change. Here the impact of climate change and input delaying in the specific cases of Humboldt and Webster counties Iowa, are explored as well as a process to assess such impacts on other environments. For adequacy of data, these two locations are chosen in the U.S. and specific agricultural operations simulated. Representative farms for Humboldt and Webster Counties, Iowa, approximately at latitudes/longitudes (42.58, -94.20) and (42.42, -94.19) respectively, are used for simulations of corn-soybean crop rotations. Corn-soybean rotations are the most common corn production method in the U.S. due to the beneficial byproducts of soy production on corn yields in the following year. A remarkable byproduct of soybean production is nitrogen development in the soil, a byproduct of many legume crops caused by bacteria in their root systems that convert
atmospheric nitrogen into a form useable by crops. Nitrogen availability is one of the major determinants of corn yield and quality. Fertilizers are the second largest cost in U.S. corn production after land, and soy-corn-soy rotations have repeatedly been determined to be the most profitable long run production strategy.

The Environment Productivity Integrated Climate (EPIC) model is a process based, farm level agricultural production simulator (Williams, Jones, & Dyke, 1984; Sharpley & Williams, 1990), which has been used in numerous agricultural and environmental impact studies. EPIC operates on a daily time step, using multiple inputs and production parameters to determine crop output plus a number of related statistics. Crop growth, soil quality, farm management practices, production inputs, and weather properties are all considered. Brown and Rosenberg (1997) provide an adequate overview of each input’s importance, interplay in EPIC, and effects on yield in a general case whose simulation area includes Iowa. General crop parameters, management practices, and locational properties have been refined in EPIC through years of application, validation, and program feedback from cases across the U.S. and abroad. The simulation is then calibrated for the specific case being considered. Daily weather data for the historical period comes from the National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS), and Cooperative Observer Program (COOP), included in EPIC for the period 1960-2010. For Humboldt and Webster counties, the Fort Dodge 5 NNW weather station (station ID: GHCND: USC00132999) provides the weather data for both counties. Simulated monthly weather (temperatures and precipitation) for the period 2011-2040 comes from a 1/8 degree downscaled CSIRO Mk3 Climate System Model (Bureau of Reclamation, 2013; Gordon et al., 2002) of the Intergovernmental Panel on Climate Change (IPCC) A1B scenario (IPCC, 2007) run through the MODAWEC daily weather generator (Liu, Williams, Wang, & Yang, 2009) to produce the appropriate daily weather input for EPIC. Soil compositions for both counties are selected using the USDA National Resource Conservation Service (NRCS) Web Soil Survey (WSS) (USDA NRCS, 2012). Simulations are created to represent the vast majority, approximately 80%, of the soil composition of the representative farm areas chosen, with production yields weighted by proportion of each soil.

### Table 1. Soil properties of representative farms

<table>
<thead>
<tr>
<th>Location</th>
<th>Soil (Code)</th>
<th>Percent of Total Farm Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humboldt County</td>
<td>Canisteo clay loam, 0-2% slope (507)</td>
<td>40.5%</td>
</tr>
<tr>
<td>(42.58°N, 94.20°W)</td>
<td>Clarion loam, 2-5% slope (138B)</td>
<td>19.7%</td>
</tr>
<tr>
<td></td>
<td>Nicollet loam, 1-3% slope (55)</td>
<td>12.7%</td>
</tr>
<tr>
<td></td>
<td>Webster silty clay loam, 0-2% slope (107)</td>
<td>12.3%</td>
</tr>
<tr>
<td>Total percentage of soil represented:</td>
<td></td>
<td>85.2%</td>
</tr>
<tr>
<td>Webster County</td>
<td>Canisteo clay loam, 0-2% slope (507)</td>
<td>25.2%</td>
</tr>
<tr>
<td>(42.42°N, 94.19°W)</td>
<td>Clarion loam, 2-5% slope (138B)</td>
<td>13.0%</td>
</tr>
<tr>
<td></td>
<td>Nicollet loam, 1-3% slope (55)</td>
<td>20.5%</td>
</tr>
<tr>
<td></td>
<td>Webster silty clay loam, 0-2% slope (107)</td>
<td>20.3%</td>
</tr>
<tr>
<td>Total percentage of soil represented:</td>
<td></td>
<td>79.0%</td>
</tr>
</tbody>
</table>

Due to the unfeasibility of delaying herbicides, pesticides, and fungicides in practice, damage from weed competition, pests, and mildew as well as the effectiveness of defensive expenditures was simplified out of the model, only showing up implicitly in the calibrated crop harvest index.

There are multiple climate change scenarios available and the quantity and variety of projections grows with each IPCC assessment. For this analysis one scenario is chosen, the IPCC fourth assessment A1B scenario. In addition to effecting the specific CSIRO Mk3 climate model projection selected, the A1B scenario determines the CO2 level. NOAA annual CO2 levels from Mauna Loa Observatory (NOAA ESRL GMD, 2012) are used for the historical period while the IPCC fourth assessment A1B CO2 projections are used for 2011-2040. The assessment report presents decadal stepped increases in CO2, which are extrapolated on an annual basis assuming steady annual increases in CO2 between projections. I considered using historical monthly variations in CO2 to simulate monthly variations for the projected simulation period. Effectively, it would cause a small CO2 reduction in the growing season and increasing CO2 in the off season, leading to slightly reduced yields across all years. This, however, is saved for other research. A limitation to note about EPIC is its inability to account for disasters such as flooding. So during a year where flooding hits an area, yields are only affected to the extent that excess rainfall affects yields, not to the extent of crops and topsoil being swept away. The projections of the chosen climate scenario versus current weather are presented in figures 2 through 5.
Daily climate generation information

There is a temporal mismatch between projections from established climate models and needs of process based agricultural simulations. While CMIP5 projections will resolve this issue in the future, existing reliable projections leave the problem to be resolved. The CMIP3 downscaled CSIRO Mk3 climate system model projections in this research are on a monthly timescale while EPIC requires daily climate data for accurate simulations. EPIC contains a built-in weather generator, WXGEN, which for a given set of parameters for each month simulates daily climate. WXGEN, however, uses the same parameters to generate weather across the entire period of interest, which is acceptable in many EPIC applications. Due to the climate change focus of this research using the IPCC A1B scenario over the next 30 years, the inputted generation parameters for EPIC instead need to change yearly. To accommodate this, the MODAWEC daily weather generator is used with the CSIRO Mk3 monthly data inputted to generate daily temperature and precipitation projections for Humboldt and Webster counties across the period 2011-2040.

EPIC validation

Validation of the EPIC model can be an extensive process, here an outline of the three stage validation process used in this paper is presented. First, simulated yield data for Humboldt and Webster counties is compared to actual county average yields over a historical period. The historical yield data used, from 1990-2009 (less 1993), is from USDA NASS, but 1993 is excluded from the validation process due to catastrophic flooding that year.
making the data unrepresentative of the production process (which was also the case in 2010). The EPIC average yields for the two decade period were 3.23% and 1.76%, respectively, off actual yields.

Next, a regression is conducted of actual yields against EPIC simulated yields for the representative farms in each county. Including a variable for time and removing two non-representative years due to significant weather events, the simulated models for both counties demonstrate an explanatory factor of 78.9% in non-irrigated corn yields from 1990-2010 (less 1993 and 2010). This level of explanatory power falls well within acceptable EPIC usage in the discipline. Figures 6 and 7 are scatterplots of actual versus simulated yields for Humboldt and Webster counties.

![Figure 6. Scatterplot of simulated versus actual yields for Humboldt County, Iowa using EPIC.](image)

![Figure 7. Scatterplot of simulated versus actual yields for Webster County, Iowa using EPIC.](image)

Finally, the responsiveness of EPIC calibration is compared to work done by others in the field. Brown and Rosenberg (1997) present an extensive matrix of EPIC responsiveness to changes in simulated weather factors. Using farms representative of the Missouri-Iowa-Nebraska-Kansas (MINK) region, Brown and Rosenberg assess the impact of changes in single climate variables and compound changes in EPIC. Adjusting the weather factors of EPIC per the guidelines in Brown and Rosenberg demonstrates the model responds very similarly to their findings for Iowa production. This suggests that if my calibration is wrong, I will at least be in good company.

The EPIC model in this analysis is extensively validated. It accurately replicates yields on average over the past two decades, explains a large proportion of the variability seen in the period, and responds within expectations set by research published in the field.

**Simulation results**

In all simulations the quantity of fertilizer is held constant while the timing of its application is varied across model runs. Best management practices are determined within the defined production environment. Fertilizer quantities are at levels comparable to production practices, which even in optimized application cannot completely eliminate nitrogen stress in every year. Note, while fertilizer quantity is set, a technological improvement trend is included in the model (through the parm editor), which linearly approximates improvements in agricultural technology, including effectiveness of fertilizer over time. This simulation is intended to replicate real world production and so an extensive production pre-run is used in the validation process and production runs. A pre-run of several years is consistent with real world conditions, especially in Iowa. Rather than the first year of production occurring in virgin soil, it is part of continuous production. Agriculture is a staple of Iowa’s economy, and it would be unreasonable to simulate production otherwise, and so an extensive production pre-run is utilized.

Figures 8 and 9 present the results of delayed fertilizer inputs in Humboldt and Webster counties on yields for the historical period 1990-2010 and projected 2011-2040 A1B based climate scenario. As previously discussed, it is reportedly a commonly held belief that a delay in fertilizer, specifically nitrogen, causes irreparable yield loss in corn production. However, in this simulation corn-soybean production, yields significantly increase with an application delay. Yield maximization is identified when fertilizer is applied at four to six weeks after planting. A 3.27% (5.18 bushels/acre) yield increase was possible in the 1990-2010 period while a 2.38% (4.22 bushels/acre) increase remains possible on average in 2011-2040 under the climate change scenario. A yield increase from
delaying fertilizer application is consistent with some agronomical research on corn production and in contrast to others. Scharf, Wiebold, and Lory (2002) provide an overview of such literature.

Figure 8. Fertilizer input timing yield curves and related nitrogen stress curves for Humboldt County. The blue line and scale represent the period 1960-2010 while the red applies to 2011-2040 projected production.

Figure 9. Fertilizer input timing yield curves and related nitrogen stress curves for Webster County. The blue line and scale represent the period 1960-2010 while the red applies to 2011-2040 projected production.

The use of a corn-soy rotation versus corn following corn production is thought to be a significant factor in the yield increases from delaying inputs seen in the results. The nitrogen supplementing characteristic of soybeans is likely providing enough nitrogen during early growth stages of corn, but is insufficient to sustain optimal growth beyond the approximately six week point into seasons on average. Fertilizer applications at the six week point provide sufficient nitrogen to sustain fertilizer stress free-growth through the balance of the season. Fertilizer applications earlier than six weeks allows nitrogen stress later in the season while fertilization later in the season leads to nitrogen stress earlier in the season as soy crop provided nitrogen is used up. Note the difference in results between Humboldt and Webster counties, the differences in soil composition cause the rate of nitrogen loss and availability to differ in the otherwise same production environments.

In figures 8 and 9 the shape of the input timing dependent yield curves change between 1990-2010 and 2011-2040. This is a result of changes in annual CO2 concentrations, monthly precipitation, and minimum/maximum temperatures as all other production parameters, less the timing of fertilizer application, are constant. In both figures, yield scales for 1990-2010 are on the left axis while scales for 2011-2040 are placed on the right axis. Production results for the 1990-2010 and 2011-2040 have been overlaid, allowing clearer assessment of changes in the curves despite generally higher yields in 2011-2040 due to technological improvements. In both locations, yield drops off earlier in the yield curves in 2011-2040. Changes in how rapidly degree-heat unit requirements are met and thus nitrogen is consumed by the crop is a likely primary reason for changes in the input timing dependent yield curves. These results suggest fertilizer should be delayed in corn production components of corn-soybean rotations, even without the use of a risk reducing decision making process. However, the input delay rationale in section four could lead to an input point even later than the yield optimizing input point depending on the timing of loss events within seasons.

Clearly other factors are influencing farmer decisions on corn input timing. Perhaps implicit knowledge on yield variability with input timing is the culprit providing disincentives for adoption of delayed input habits. Figure
Figure 10 displays how standard deviation in yield is projected to change under delayed input strategies. In the recent production period it is clear yield variability would have changed little with fertilizer input delays as late as six weeks after planting. While changes in yield variability haven’t traditionally been a factor then, this issue is expected to play a greater role in coming decades. Projections under the simulation’s climate change model are expected to increase yield variability significantly with a shift in fertilizer application from planting to six weeks into the season. A producer who is risk averse and yet doesn’t expect total losses such that input delaying would reduce costs would be further discouraged from changing practices in the future.

The results of this EPIC simulation, unlike the decision making model, are highly condition specific. To find the optimum input timing for any site, a tailored EPIC simulation or similar agronomical analysis should be performed. And having relied on a climate model for the period 2011-2040, the accuracy of this simulation is also dependent on closeness of the climate model to actual climate change experienced in the area.

Discussion

The evidence suggests both incentives and disincentives exist to delay agricultural inputs. EPIC simulations of Humboldt and Webster counties indicate mean yield gains are possible under both current and projected climate conditions. A counterfactual using corn price data from Iowa State University puts the value of this incentive at $14.56 per acre per year on average in the period 1990-2010 (Iowa State University, 2014). Another incentive exists as a method to mitigate risk. For the geographical area of interest, while FEMA disaster declarations occurred throughout the period of interest, only one flood incident was of such scale to consider crops a total loss on a county scale. The 1993 disaster also occurred at a point within the season such that a six week input delay strategy, as suggested by EPIC’s simulated yield data, would have also been effective in reducing losses. Using the same Iowa State University price data, the value of this incentive was approximately $103.51 per acre in 1993 and on average $127.86 from 1990-2010 in any year in which a total loss is incurred (price of fertilizers, application, and cost of harvest per the decision making model in this paper). On large scale farms these potential profit increases and cost decreases are potentially very large. However, EPIC simulated yields also suggest a change in variation of yields with delayed input strategies. Changing from an at-planting to six week delayed input strategy was shown to only slightly increase yield variance in the historical period but will significantly increase it over coming decades. Clearly then, a corn-soy producer, if knowledgeable about these incentives must balance yield
increases and cost savings during disasters against consistency of yields in making an input timing decision. Policy options to exploit these incentives also clearly exist due to crop insurance, futures, and other sorts of purchase agreements.

Natural incentives do exist, with potentially substantially remunerative outcomes, yet such outcomes will be dependent on specific field conditions. Therefore policy should focus on information gathering and sharing and encouraging farmers to experiment with fertilizer delaying. Because total financial losses will be lower in years where disaster strikes before fertilizer application, such savings warrant lower payouts and costs to multi-peril crop insurance (MPCI). Modification of USDA RMA policy, through which MPCI rates are set, could allow discounts for farmers who demonstrate use of a delayed fertilizer strategy. Alternately, the government subsidizing farmer premiums, contingent on delayed application of fertilizer, say over a few growing seasons, could be a relevantly similar yet politically easier to implement alternative. However, contingent subsidies are temporary in nature while insurance discounts are a more permanent option. Due to the strength of incentives in this imperfect information environment, an information campaign could have substantial impact. Providing a packaged, simplified agronomical simulator to allow today’s tech savvy producers to run similar experiments could be an efficient way to encourage change. A series of field experiments, over multiple years and input strategies to confirm these results, would also be helpful. Pairing these two information methods, field experiment publication with a simplified crop simulator calibrated to allow farmers to easily compare their field conditions to the experiment’s, would likely further enhance each tool’s effectiveness. While presented here to encourage discussion, these policy options will be explored in greater detail and placed in historical context where possible in subsequent research.

Conclusion

Delaying agricultural inputs in an environment of uncertainty may reduce exposure to risk for non-irrigated agricultural producers. Agricultural input delays can be assessed for a given location using the EPIC model. Conditions modeled for Humboldt and Webster counties suggest non-irrigated corn yields can be enhanced by delaying fertilizer application until 4-6 weeks after planting. This result held in simulations of historical as well as projected conditions through 2040. However, under future conditions there may be an increased risk of loss if fertilizer is delayed too long. Input decision making to reduce risk, when compared to declared disaster frequency, also suggests an input delay strategy, of perhaps even greater than six weeks depending on producer preference and exposure to risk within the county. And while yield variability hasn’t played a role in fertilizer timing practices up to a six week delay historically, it will play a greater role as a disincentive in future production. Even still, current and recent input prices to corn production should make such an input delaying strategy enticing to all but the most change and yield variability averse producers. Policies to entice producers to try out such alternative practices may only be needed in the short run, to incentivize perseverance in overcoming any learning curve in increasing output and reducing production costs as well as farmer exposure to disaster related risk.
References


Appendix A

Additional underlying assumptions of the model

I want to make explicit many of the additional assumptions in the model:
1. Price and quantity at market reflect the value received by farmers.
2. Producers are rational profit maximizers within the confines of a specific crop.
3. If expected profit ($\pi_e$) is positive, producers will produce during the appropriate season.
4. Information about $\pi_e$ in a season improves, as uncertainty decreases with progression of the season. For each day that passes in a season, knowledge of how similar the current crop is to what the final product will look like improves on average.
5. Farmers have two significant input points (Magnan, Lybbert, Mrabet, & Fadlaoui, 2011): $I_1$ at planting and $I_2$ at a later growth stage, plus $I_H$ which is harvest.
6. Input costs are fixed across a season (labor, fertilizer, defensive expenditures, etc), later it may be considered costs can change within a season due to adoption of input delaying practices.
7. Farmers can change or modify machinery in the long run to accommodate new farming strategies.
8. Related to number 7, machinery good at later stages in a season is assumed to also be efficient at planting.
9. Constant returns to scale is assumed in this model. In practice this is approximately the case as only farmers of a size capable of profit with the input prices available will be in business. Related, smaller farms can input share or rent at a small difference from larger farming operations.
10. Homogenous production across a farmer’s acreage (field homogenization).
11. Rain fed farming operations face greater uncertainty due to weather than irrigated producers.
Appendix B

Input decision making model in no-till agriculture

Under no-till (NT) agriculture, the benefit of delaying inputs is slightly greater when an area is hit by catastrophic weather events. For the traditional farmer, equations (2.2), (2.3), and (2.4) describe their input schedule, harvest decision, and full input decision at planting. But for NT farmers these equations become:

\[
\pi_e = P_e Q_e - I_1 (L - L_U, S, F, D) - I_H (H + L_L) \quad \text{(2.2}_{\text{NT}})
\]
\[
P_e Q_e < I_H + L_k \quad \text{(2.3}_{\text{NT}})
\]
\[
\pi_e = P_e Q_e - C (L, S, F, D, H) \quad \text{(2.4}_{\text{NT}})
\]

Here it is assumed NT practices do not antiquate input \(L_L\), and instead reallocate it from early season field preparation to an equal amount of post-season field maintenance. Note equation (2.4)\(=\text{(2.4}_{\text{NT}})\) as the reallocation of labor is within each season.

The delayed input farmer experiences the following changes to equations (2.5) and (2.6) under NT:

\[
\pi_e = P_e Q_e - I_1 (L - L_U, S, D) - I_2 (F) - I_H (H + L_L) \quad \text{(2.5}_{\text{NT}})
\]
\[
\pi_e = P_e Q_e - I_1 (L - L_U, S, D) - I_2 (F, H, L_L) \quad \text{(2.6}_{\text{NT}})
\]

And so under NT production, equations (2.10) through (2.13) become

\[
\text{mild event, one-decision farmers lose } -\pi = C (L, S, F, D, H) - PQ \quad \text{(2.10}_{\text{NT}})\text{=}\text{(2.10)}
\]
\[
\text{or catastrophic event lose } -\pi = C (L - L_L, S, F, D) \quad \text{(2.11}_{\text{NT}})
\]

and

\[
\text{mild event, two-decision farmers lose } -\pi = C (L, S, F, D, H) - PQ \quad \text{(2.12}_{\text{NT}})\text{=}\text{(2.12)}
\]
\[
\text{or catastrophic event lose } -\pi = C (L - L_L, S, D) \quad \text{(2.13}_{\text{NT}})
\]

From comparing equations (2.10) through (2.13) to equations (2.10\text{NT}) through (2.13\text{NT}), NT only makes a difference in profit if catastrophic events occur if traditional tillage and no-till agriculture produce the same yields. Magnan, Lybbert, Mrabet, and Fadlaoui’s (2011) discussion of no-till agriculture in Morocco as a means to mitigate drought then are only applicable to developing economies with low levels of agricultural mechanization.
A Matter of Principle: The Influence of America’s Declaration of Independence on Post-Declaration Literature

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English

Abstract

This study explores the ways in which selected principles contained within America’s Declaration of Independence are addressed in works of post-Declaration literature. The examined works are from the nineteenth-century. It was during this time that America’s writers were attempting to establish a uniquely American literature, and the Declaration of Independence, with its rhetoric of equality and unalienable rights, provided a fertile ground for that effort. Drawing upon scholarship from the document itself, I discuss the Declaration and provide a brief explication of the principles contained within the preamble. I then compare and contrast how those same principles are incorporated and interpreted in passages from Ralph Waldo Emerson’s essay, The American Scholar; Nathaniel Hawthorne’s novel, The House of Seven Gables; and Henry David Thoreau’s essay, Resistance to Civil Government. The purpose of the study is to demonstrate how important political ideas and values become infused into public consciousness and rooted into cultural identities by way of artistic medium. The results indicate a significant influence of the political ideas embodied within the Declaration upon the selected works.

Introduction

America’s Declaration of Independence articulated and codified an evolving body of political philosophy whereby the old system of monarchical rulers, self-legitimized by long-held constructs of heredity and divine right, collapsed under the influence of new and enlightened ways of thinking—concepts of natural rights, equality, and individualism. It became, in a sense, a manifesto for the value and dignity of all people and their right to self-government. In an effort to establish a uniquely American literary tradition, American writers of the nineteenth century employed the principles of the Declaration as motifs in their writings, at times using them to advance a particular social critique or as benchmarks with which to measure the ills and injustices they observed in the world around them.

This study explores the ways in which selected principles contained within the Declaration of Independence are addressed in various works of American post-Declaration literature. Drawing upon scholarship from the document itself, I discuss the Declaration—its significance, object, sources of influence, and the principles embodied within the opening paragraph and the preamble. I then compare and contrast how those principles are incorporated and interpreted in passages from each piece of literature, along with what impact, if any, the context has upon how the principle is interpreted. In the course of my discussion I shall demonstrate to the reader that the public narratives which animate American political culture are at the very least impelled not necessarily by philosophical treatises or official state documents, but in part by art and literature. Capture the imagination, as literature surely does, and the mind will follow.

The Significance of the Declaration

In the heat of active conflict with what was at the time the greatest military power on the globe, the Declaration was conceived as an instrument by which the colonies might assume a “separate and equal station […] among the Powers of the Earth” (U.S. Declaration of Independence) and thereby enter into treaties and alliances with those Powers willing to aid the American cause. It was the essential document of the American Revolution, announcing “the emergence of a new actor (‘one people’) on the international stage” (Armitage). Yet due at least in part to the elegant articulation of the revolutionary principles it embodies, the Declaration quickly transcended its importance as the essential document of the Revolution to become what Thomas Jefferson termed “an instrument
pregnant with our own, and the fate of the world” (Jefferson, Writings 1516), an instrument that would ultimately inspire others to petition for rights long denied, and that would serve as the philosophical framework and inspiration for a number of evolving states in the centuries to come.

It wasn’t just Jefferson and his fellow patriots who understood the historical significance of the American Revolution and the Declaration. Across the Atlantic in that very nation with which the colonies sought “to dissolve the Political Bands” (Declaration) connecting them, Edmund Burke wrote:

A great revolution has happened—a revolution made, not by chopping and charging of power in any one of the existing states, but by the appearance of a new state, of a new species, in a new part of the globe. It has made as great a change in all the relations, and balances, and gravitation of power, as the appearance of a new planet would in the system of the solar world. (William 453)

Indeed it was that very newness, that uncharted territory of the American Revolution and its signature Declaration, which proved essential in allowing America’s founders to put forth new ideas concerning the rights and dignity of the individual and the proper role of government—ideas that would galvanize and inspire American writers of the nineteenth-century.

The Object of the Declaration

The main imperative in drafting the Declaration of Independence was to allow Americans to escape the dangerously vilifying epithet of rebellious colonies, and instead present themselves to the world as a newly sovereign nation under siege and in need of assistance—to “become legitimate belligerents outside the British Empire rather than to remain rebels within it” (Armitage). The case had been building for some time, ever since George III declared the colonists to be in open rebellion and committed a large armada “to put a speedy end” (McCullough 11) to the uprising. John Adams worried how being branded by George as “traitors” engaged in a “desperate conspiracy” (McCullough 10) would affect American representatives: “Would not our Proposals and Agents be treated with Contempt?” (Armitage), he asked. Another patriot, Thomas Paine, voiced similar concerns in his pamphlet Common Sense, when he wrote “the custom of all Courts is against us, and will be so, until by an Independence, we take rank with other Nations” (Paine 77). Among others, Adams and Paine were concerned not only with America’s prestige and ability to negotiate trade agreements, but the very real and urgent concern of having to confront the full might of British military power with no foreign assistance whatsoever. That would not be necessary, however, as the Declaration of Independence announced America’s arrival as an equal player on the world stage able to negotiate its own treaties and alliances.

In order to better understand the logic of the document and how it argues its case for the necessity of independence and the right to international recognition, Stephen E. Lucas breaks the Declaration down as a deductive argument in syllogistic form:

Major premise: When government deliberately seeks to reduce the people under absolute despotism, the people have a right, indeed a duty, to alter or abolish that form of government and to create new guards for their future security.

Minor premise: The government of Great Britain has deliberately sought to reduce the American people under absolute despotism.

Conclusion: Therefore the American people have a right, indeed a duty, to abolish their present form of government and to create new guards for their future security. (Lucas)

Although the Declaration was written with practical considerations in mind, it was much more than just an expedient with which to garner political and military support. From the political philosophies of men such as John Locke, to the town halls and pulpits of New England, “harmonizing sentiments” (Jefferson, Writings 1501) were afloat about the nature of rights and the proper role of government. Just as the vast American landscape provided seemingly endless frontiers to be explored, American society provided a political and philosophical frontier unencumbered by centuries of entrenched traditions and structures of power. Thomas Jefferson expressed this sentiment almost forty-eight years after the Declaration was adopted when he wrote that, “our revolution […] presented us an album on which we were free to write what we pleased. We had no occasion to search into musty records, to hunt up royal parchments, or to investigate the laws and institutions of a semi-barbarous ancestry. We appealed to those of nature, and found them engraved upon our hearts” (Jefferson, Writings 1491). Thus, in drafting
the document that would irreversibly launch thirteen colonies into nationhood and a perilous but seemingly unbounded future, Jefferson inscribed the principles and phrases that not only reflected a revolution in thought that had been evolving for decades prior to the events of 1776, but that would reverberate in the minds and writings of generations to come.

The American Mind: Sources of Influence

By the time Jefferson was charged by the Committee of Five with drafting the Declaration, a growing number of colonists had been persuaded of the unavoidability of independence. A cascade of events—Acts and Resolutions, mutual enmities, and preparations for war on both sides of the Atlantic—served to make independence a virtual fait accompli, as the minds of many Americans had made an about-face regarding their duties to the Crown. John Adams later reflected that “[t]he Revolution was in the minds and hearts of the people; a change in their religious sentiments of their duties and obligations. […] This radical change in the principles, opinions, sentiments, and affections of the people, was the real American Revolution” (Adams 282-83). It was precisely that revolution in the “minds and hearts of the people” that made possible the breaking of those “Political Bands.” If events had gone just a bit more his way, George III indeed might have put a speedy end to the rebellion as planned, but he had already lost the most important prize of all, the hearts and minds of the American people.

From an historical perspective, so new and unique were the conditions that existed in the colonies, so untried were the ideas and principles which animated the evolving American mind, that the Declaration dawned a new era. It served as a melting pot of recent experiences and new ideas, of philosophical influences distilled to their most logical core and taken to the apex of rhetorical potency. Jefferson puts it thusly:

This was the object of the Declaration of Independence. Not to find out new principles, or new arguments, never before thought of, or never before said; but to place before mankind the common sense of the subject, in terms so plain and firm as to command their assent, and to justify ourselves in the independent stand we are compelled to take. Neither aiming at originality of principle or sentiment, nor yet copied from any particular and previous writing, it was intended to be an expression of the American mind, and to give to that expression the proper tone and spirit called for by the occasion. All its authority rests then on the harmonizing sentiments of the day, whether expressed in conversation, in letters, printed essays, or in the elementary books of public right, as Aristotle, Cicero, Locke, Sidney, etc. (Jefferson, Writings 1501)

Just what was this American mind, and what were the influences that spawned it? The singular experience of crossing the Atlantic to begin anew in a vast wilderness, unencumbered by the suffocating legacy of “musty records” and “royal parchments” endowed the colonist with a certain disposition of independence and self-reliance that proved fertile ground for the political philosophies of John Locke and classical liberalism. Michael Zuckert writes that “[t]he new order of the ages was possible in part because the new world supplied far greater opportunity for something like a new beginning” (Zuckert 5). Indeed, in his Letters from an American Farmer, J. Hector St. John De Crévecœur seems to capture that new beginning of the pre-Revolution American character. In America, Crévecœur writes, “[w]e are all animated with the spirit of industry which is unfettered and unrestrained, because each person works for himself. […] Here are no aristocratical families, no courts, no kings, no bishops, no ecclesiastical dominion, no invisible power giving to a few a very visible one…” Here in this “great American asylum” (Crèvecœur 67-68), was a melting pot of many nations “whose labours and posterity will one day cause great changes in the world” (Crèvecœur 70). While Crévecœur’s idyllic vision of bucolic America would become sullied by the mutual suspicions, enmities, and acts of violence between neighbors brought about by the Revolution, his characterizations nonetheless point to an American whose character, once separated from the suffocating yoke of European monarchies and able to experience the rewards of industry and self-reliance for the first time, became conversant with the ideas and principles that would become the Declaration of Independence.

While the American mind was at least in part being formed by the frontier experience, Zuckert argues a strong case for John Locke as the predominate source of philosophical inspiration, forcefully concluding that “Locke inspired the Declaration and that it has a basically Lockeian meaning” (Zuckert 40). As one of many examples of the principles informing the “harmonizing sentiments” upon which Jefferson drew, in his Second Treatise of Government Locke reasons that “[t]he state of nature has a law of nature to govern it, which obliges everyone: and reason, which is the law, teaches all mankind, who will but consult it, that being all equal and independent, no one ought to harm another in his life, health, liberty, or possessions” (Locke 9). When we turn to Jefferson’s original
draught of the Declaration we read the following: “We hold these truths to be sacred and undeniable; that all men are created equal & independent, that from that equal creation they derive rights inherent & inalienable, among which are the preservation of life, & liberty, & the pursuit of happiness” (Jefferson, Papers 423). Notice Jefferson’s replication of the phrase “equal and independent,” his use of the words “life” and “liberty,” and that he logically derives “inherent & inalienable” rights from the status of “equal creation.” Indeed, evidence of Lockean influence is further bolstered upon noting Jefferson’s comment that the “trinity of the three greatest men that have ever lived, without any exceptions, [where] Bacon, Locke, and Newton” (Jefferson, Writings 939).

All of these sources of influence, when combined, contributed to the formation of Jefferson’s “American mind,” setting the philosophical stage and providing the “harmonizing sentiments” for what Stephen E. Lucas calls “perhaps the most masterfully written state paper of western civilization” (Lucas).

The Foundational Principles of the Declaration of Independence

In order to grasp the principles contained within the Declaration one must first grapple with the concept of natural law. It inherently and diametrically opposes Jonathon Winthrop’s notion that men [humans] are “ordained to be unequal” (Winthrop), which would have to mean that people enter into civil society already in a state of “ordained” inequality. Yet, the equality that exists within the scheme of natural law does not mean that all people in a pre-civil state are equal with regards to physical attributes, intellectual abilities, and things of that sort; rather, it means that “all men [humans] are created free and independent [and that] no one of them should be dependent on the will [or authority] of another” (Zuckert 33). At its very core this concept is antithetical to the centuries of divine right and birthright which preceded Locke’s Second Treatise. It is from the presupposition of natural law and the “harmonizing sentiments” of the day, therefore, that the principles of the Declaration’s Preamble emanate seamlessly.

The most effectual and systematic approach with which to explore those principles contained within the Preamble is by way of Lucas’s interpretation. Building logically from the premise of natural law in the introductory paragraph of the Declaration, he presents the principles as five propositions whereby each follows deductively from the previous until the final proposition justifies the essential philosophical purpose of the Declaration:

Proposition 1: All men are created equal
Proposition 2: They [all men, from proposition 1] are endowed by their creator with certain unalienable rights.
Proposition 3: Among these [mean’s unalienable rights, from proposition 2] are life, liberty, and the pursuit of happiness
Proposition 4: To secure these rights [man’s unalienable rights, from propositions 2 and 3] governments are instituted among men
Proposition 5: Whenever any form of government becomes destructive of these ends [securing mans’ unalienable rights, from propositions 2-4], it is the right of the people to alter or to abolish it. (Lucas)

Although not explicitly stated, nested within these propositions is the indispensable principle of individuality. In order for the above principles to make any kind of sense the importance of the individual as a sovereign and irreducible moral agent is essential. In order for the words equal or unequal to have any real meaning when applied to people, there must first be individuals, and each individual must be independent and have ownership over him or herself. Likewise, unalienable rights are endowed upon each individual as a matter of individual birthright, not as a function of belonging to any group or to a majority faction, and emphatically not as a bequeathal from civil government.

The principle of being born equal would seem to obliterate all forms of aristocracy. Indeed it does prove fatal to artificial aristocracies—those forms deriving from man-made constructs of divine right and birthright. But while according to natural law theory in a pre-political state no one individual is endowed with the authority to rule over another, in a civil state it is to the advantage of all society if those who are most endowed with certain talents are allowed to flourish in those talents and use them in ways that benefit not only themselves but their fellow citizens. These are natural aristocracies, and they may include any number of talents which apply to various occupations, including government offices. While initially derived from the status of having been created equal, the concept is also linked to the right of the pursuit of happiness—the notion that each individual should have the liberty
to discern his or her talents and virtues and to develop them to their fullest, unfettered by artificial or arbitrary restraints.

It is with this understanding of the Declaration of Independence in mind that we turn to three writers of nineteenth-century literature in search of its principles: Ralph Waldo Emerson, Nathanial Hawthorne, and Henry David Thoreau.

The Literature

Emerson’s intellectual Declaration of Independence

Oliver Wendell Holmes once pronounced Ralph Waldo Emerson’s *The American Scholar* as “our intellectual Declaration of Independence” (Cheever 34). Indeed, using words that mirror the sentiments of America’s Declaration, Emerson cautions his readers that “[w]e have listened too long to the courtly muses of Europe” and that “[o]ur day of dependence, our long apprenticeship to the learning of other lands, draws to a close” (Emerson 1150). The colonies had successfully declared their political independence and claimed their separate but equal station as a new nation, now it was time for America to take its separate and equal station as a cultural and intellectual force.

Emerson finds in nature the source of those laws which govern the human mind when he writes that “The first in time and the first in importance of the influences upon the mind is that of nature” (Emerson 1139). In nature only, according to Emerson, does one discover the analogues to the laws of his mind. This bears a strong corollary with Jefferson’s “Laws of Nature and of Nature’s God” (Declaration) in which are rooted the necessary and proper prerequisites for government. Emerson sees God’s laws, manifest in nature, as discernible through reason, and cautions against depending upon the interpretations of others—what he calls “other men’s transcripts of their readings” (Emerson 1142). For Jefferson, “other men’s transcripts” might very well have been whatever apologetics kings, nobles, and priests employed in order to justify their superior positions, the very sort of transcripts that the Declaration pronounces null and void. And while Emerson’s views were more pantheistic than Jefferson’s in that he regarded nature and the human mind as “analogues,” the important similarity is that both men rejected the notion that man, any man, whether it be a European monarch or a European writer, has the authority to write the scripts by which others must define themselves, either politically or intellectually. Those scripts (laws), are available equally for all to discern and live by, through nature. “We will walk our own feet,” writes Emerson; “we will work with our own hands; we will speak our own minds” (Emerson 1150).

Another sign of our times, also marked by an analogous political movement is, the new importance given to the single person. Everything that tends to insulate the individual,—to surround him with barriers of natural respect, so that each man shall feel the world is his, and man shall treat with man as a sovereign state with a sovereign state [created equal];—tends to true union as well as greatness. (Emerson 1150)

The “analogous political movement” Emerson refers to, combined with the “new importance given to the individual,” is the “real American Revolution” distinguished by John Adams and codified by Jefferson in the Declaration of Independence. It is also noteworthy that in these lines Emerson captures the essence of Jefferson’s interpretation of natural law—that in a pre-political state each man (person) is sovereign and independent with respect to authority over his own person and property.

In the Preamble of the Declaration the principle that all Men [humans] are created equal takes logical preeminence as the first proposition. Within the schema of the Declaration not only has the individual risen to a position of primacy but, at least in spirit, the haughty have been demoted while the lowly have gained a measure of respect. At the very least they are no longer the default inferiors to kings and nobles. Although this point is not expressly stated in the Declaration it certainly is on the mind of its author in his proposed Bill for the More General Diffusion of Knowledge, and in several of his personal letters. In the Bill, Jefferson states that in order to promote the public happiness, those “whom nature hath endowed with genius and virtue” should receive a liberal education so that they will be equipped to “guard the sacred deposit of rights and liberties of their fellow citizens,” and that “they should be called to that charge without regard to wealth, birth or other accidental condition or circumstance” (Jefferson, Writings 365). “Worth and genius would thus have been sought out from every condition in life,” he
writes in a letter to John Adams (Jefferson, Writings 1308). The notion that the lowest members of society, if endowed with sufficient “genius and virtue,” should be not only allowed to move up from their class but assisted in doing so, was in itself a revolutionary idea.

Although Emerson does not refer to or even acknowledge instances of innate genius within the poor, or the necessity of providing educational opportunities for them—set free by the equalizing sentiments of the Declaration—some common people are nonetheless lifted, if only modestly, from the shadows of society, such that their lives are now regarded as a reservoir of untapped subject matter for American literature. “I ask not for the great, the remote, the romantic,” Emerson writes, as if in rebuke to the aristocratic tone and subject matter of European and many early American writers, “[t]he literature of the poor, the feelings of the child, the philosophy of the street, the meaning of household life, are the topics of the time. […] I embrace the common. I explore and sit at the feet of the familiar, the low.” The created equality of the Declaration, implying an equal dignity and common spirit to all, rings through Emerson’s words as he continues: “show me the sublime presence of the highest spiritual cause lurking, as it always does lurk, in these suburbs and extremities of nature […] there is no trifle; there is no puzzle; but one design unites and animates the farthest pinnacle and the lowest trench” (Emerson 1149). It is no longer only the well-born and the wealthy who merit interest as worthy subjects for American writers, the time has come for the common and the middle-class to assume their rightful place in the American imagination, an imagination that has been prepared for just such a change in perspective by certain self-evident truths.

Nathaniel Hawthorne’s aristocracy

Although there are no explicit references to aristocracy in the Declaration, the concept is inextricably nested within the logic of natural law. Thomas Jefferson agreed with John Adams that a natural aristocracy exists and that it is grounded in “virtue and talents,” which is “the most precious gift of nature for the instruction, the trusts, and government of society” (Jefferson, Writings 1305-06). In that same letter Jefferson also discusses what he refers to as “artificial aristocracy” (Jefferson, Writings 1304), an aristocracy that is not based upon “virtue and talents” but is “founded on wealth and birth,” (Jefferson, Writings 1306) the type of aristocracy that binds generations into perpetual monopolies of power, wealth, and influence. Such monopolies are inherently hostile to the notions that “all Men [people] are created equal” and that governments “derive their just Powers from the Consent of the Governed” (Declaration). Artificial aristocracies imply that selected persons are born “booted and spurred” and require no general consent. Within the schema of natural law, however, no person is naturally endowed with the right to rule over another, whether by divine right or by birthright. Much like the “separate and equal Station” to which all nations are entitled, all persons, by way of “Nature and Nature’s God” have equal sovereignty over their own lives, liberties, and happiness. Governments, therefore, are instituted not at the pleasure of any self-entitled class of “kings, nobles, or priests” (Jefferson, Writings 859), they are instituted in order to secure the natural rights of each and every individual such that those whose virtues and talents might enable them to excel and self-actualize are free to do so.

In his novel The House of Seven Gables, Nathaniel Hawthorne evokes a rather distinct correlation with the Jeffersonian view that traditional, or artificial, aristocracies are a “mischievous ingredient in government” (Jefferson, Writings 1306) and a detriment to society in general. Throughout the text, the Pyncheon family bears a resemblance to that same old-style “artificial” aristocracy referred to by Jefferson. Within the current generation of Pynchons in the story, Jasper Pyncheon, the “Judge,” is involved in local politics, wielding his influence with an air of entitled authority, deceptively brutal at its core, and comingle with a patronizing charm. The other living Pyncheon, one whose natural virtues and talents provide a clear contrast to the imperious pride of the Judge and previous generations of Pynchons, is young Phoebe. By way of her meritorious character and her effect upon the House of Seven Gables and its inhabitants, Hawthorne suggests that there is a natural aristocracy that benefits all, wherever it dwells. This is precisely Jefferson’s assertion, that a natural aristocracy consisting of those who by birth possess superior virtue and talent will benefit all of society if allowed to flourish. However, as the story progresses the messages contained with Hawthorne’s narrative diverge from some Jeffersonian concepts; such as his assertion that “the earth belongs to each [generation],” (Jefferson, Writings 960), that “it may be proved that no society can make a perpetual constitution or even a perpetual law,” and that “[e]very constitution, then, and every law, naturally expires at the end of 19 years. It be enforced longer, it is an act of force and not of right” (Jefferson, Writings 963). Indeed, as we follow the development of the novel’s two main characters, Phoebe Pyncheon and Holgrave Maul, Hawthorne’s position appears to be that the ideal society is not one in which laws and constitutions periodically expire, but one in which there exists a blending of those institutions that provide some degree of healthy stability, along with the virtue and talents of natural aristocracy.
As the story progresses the character of Holgrave likewise progresses from being in sympathy with Jefferson’s perspectives to being in relative opposition to them. The characterizations of Holgrave at first suggest an excessive democratic zeal, but as Holgrave changes and mellows, he become less zealous and more traditional. For example, in a letter to John Adams, Jefferson wrote that “[t]he earth belongs always to the living generation. They may manage it then, and what proceeds from it, as they please” (Jefferson, Writings 963). Early in the story we find a remarkably similar perspective expressed by Holgrave. During a conversation with Phoebe he echoes those same sentiments as “it seemed to Holgrave […] that in this age, more than ever before, the moss-grown and rotten Past is to be torn down, and lifeless institutions to be thrust out of the way, and their dead corpses buried, and everything to begin anew” (Hawthorne 124-25). The narrator then tells us that this wholesale approach to change, of tearing down everything from the past, is not the way of the world, and that Holgrave’s “error lay in supposing that this age, more than any past or future one, is destined to see the tattered garments of Antiquity exchanged for a new suit, instead of gradually renewing themselves by patchwork” (Hawthorne 125). Not all traditions are oppressive, Hawthorne implies. Not every institution is “rotten and lifeless.” Some are certainly worth preserving and others might best be incrementally reformed and improved upon rather than summarily tossed aside. Holgrave will eventually come to realize that some institutions are truly venerable, that having been tested and refined over the course of generations they are in the best interest of the people, increasing their security and happiness with a minimum of discomfort or inconvenience. Another example is when early in the story, Holgrave echoes the sentiments of Jefferson as he insists to Phoebe that it “were better that they [public edifices] should crumble to ruin once in twenty years, or thereabouts, as a hint to the people to examine into and reform the institutions which they symbolize” (Hawthorne 127). But in his democratic zeal, Holgrave doesn’t want to reform institutions, he wants them “torn down” and their “dead corpses buried.” He wants “everything to begin anew.” This is not the patchwork reform that Hawthorne alludes to and seems to think is best, and later in the story Holgrave himself is reformed such that he finally sees the value of some degree of institutional stability. Phoebe is dismayed at Holgrave’s attack on all structure and tradition and lets him know it. “How you hate everything old,” she retorts, “It makes me dizzy to think of such a shifting world!” (Hawthorne 127). As the story evolves, however, Phoebe becomes the primary advocate and impetus for what will become Holgrave’s more sensible approach towards institutions and tradition.

As the only child of the deceased Arthur Pyncheon and with the other surviving Pyncheons being childless, Phoebe is the last in the family line. Yet the brash aristocratic nature of her Puritan ancestors, that “bold, imperious, relentless, crafty” (Hawthorne 85) nature that seemed to pervade each successive generation, is nowhere to be found in Phoebe. Having been raised in the country by her non-Pyncheon mother and step-father, her aspect is one of a “kind of quiet dignity” (Hawthorne 51). For Phoebe, the dreariness and drudgery of daily tasks “[have] the easy charm of play” (Hawthorne 56). She values tradition and self-reliance. In short, Phoebe is the embodiment of Jefferson’s natural aristocracy, those who by way of their gifts of talent and virtue rise up to become the guardians of individual liberty and republican institutions.

The initial tension between Phoebe and Holgrave arises from their differing views on the value of tradition—whether it be family, community, or political. Phoebe finds comfort and value in those institutions and traditions which provide for social stability and human happiness, while Holgrave, in his democratic zeal, would tear them down “once in twenty years, or thereabouts” with no regard whatsoever to their relative value or function. His is a radical rebelliousness against anything even faintly resembling the old aristocracy. Yet there is danger in Holgrave’s zeal. In Federalist Paper No.10, James Madison observes that “pure democrac[ies], [that species of democracy embraced by Holgrave], have ever been spectacles of turbulence and contention; have ever been found incompatible with personal security or the rights of property; and have in general been as short in their lives as they have been violent in their deaths” (Hamilton 76). As if speaking directly about Holgrave, Madison warns that those who “have erroneously supposed that by reducing mankind to a perfect equality in their political rights, they would at the same time be perfectly equalized and assimilated in their possessions, their opinions, and their passions” (Hamilton 76). Those such as Holgrave who advocate for such a scheme forget that when left unchecked by institutional safeguards, majorities can be just as tyrannical of individual rights as the most villainous despot.

Eventually Holgrave begins to embrace an appreciation and reverence for the sovereignty of the individual. After mesmerizing the beautiful Phoebe into a trance he resists the opportunity of “acquiring empire” over the girl’s “good, pure, and virgin spirit” (Hawthorne 147). This is the beginning of a fundamental change in the young man. Phoebe changes as well, as her unrestrained optimism and naivety becomes tempered by her experiences at the House of Seven Gables. Upon witnessing an episode of rancorous discord between family members whom she had always looked up to, she begins to have doubts about whether other persons of “eminent stamp” might, “at any single instance, be otherwise than just and upright.” Her naivety is shaken, yet true to her natural virtues, she maintains a “quiet dignity” and compassion towards others. In the chapter titled “The Flower of Eden,” in which they both confront the reality of Jaffrey Pyncheon’s corpse, Holgrave comes to full appreciation of Phoebe’s natural
Henry David Thoreau and moral duty

Before the “prevailing sentiments” that formed the philosophical groundwork of the Declaration, duty to society and government, not rights, was the overwhelming priority of civil societies. Previous generations of government were loathe to even consider, much less institute, any generalized right to rebellion. Such a thing was unheard of, and certainly ran counter to any notions of divine right. The American Declaration’s bold assertion of the right to alter or abolish was, as Zuckert states, “a novelty” (Zuckert 100), introducing a radical about-face from centuries of divine right and unquestioned fealty to ruling authorities—right or wrong. Although the Declaration admittedly does not have the force of law, for the first time in history a government had conditioned its very existence upon the consent of the people, conferring upon them the right to revolt if the government became “destructive of the Ends” by which all legitimate forms of governments are instituted—which is to secure the natural and unalienable rights of the people. In addition, what is particularly remarkable about the Declaration is that according to its precepts, governments “do not ‘derive’ their power once and for all at some originating moment” (Zuckert 28-9). Power is held contingent upon the ongoing consent of the governed with its moral authority held continually in balance. This was certainly the view of Henry David Thoreau when he wrote his essay Resistance to Civil Government.

In his essay, Thoreau makes a clear reference to America’s Declaration when he writes that “[a]ll men recognize the right of revolution; that is, the right to refuse allegiance to and to resist the government, when its tyranny or its inefficiency are great and unendurable” (Thoreau 1859). The tyranny that Thoreau found “great and unendurable” was the perpetuation of slavery in America and the Mexican War. He makes his contempt for slavery and the war very clear when he writes, “when a sixth of the population of a nation which has undertaken to be the refuge of liberty are slaves, and a whole country is unjustly overrun and conquered by a foreign army, and subjugated to military law, I think that it is not too soon for honest men to rebel and revolutionize” (Thoreau 1859). But Thoreau was not advocating taking up arms or burning down the house of government. His notion of the phrase “rebels and revolutionize” is more nuanced, as were his feelings about the government itself. In his essay “Disobedience and its Objects,” A. John Simmons identifies two motives for civil disobedience that are “perfectly justifiable” and which often guide the actions of those who engage in it: “the desire to frustrate evil […] and the desire to avoid complicity in injustice or wrongdoing” (Simmons 1808). In Resistance to Civil Government, Thoreau is motivated by both of these objectives.

To say that Thoreau is a proponent of limited government is an understatement. To him, government is “at best but an expedient” (Thoreau 1857). It is not the source of rights as the Declaration confirms. Rights are endowed by the “Creator” as an inherent and inseparable part of being born human. Nor is government in any way the source of moral authority—that too comes from the same “Creator” who endows all humans with certain rights. Government is a means, a mere “expedient” through which the will of the people is expressed. But “the world is not governed by policy and expedient” (Thoreau 1870) says Thoreau. The world, in his estimation, is governed, or at
least ought to be, by a “fountain-head” (Thoreau 1871) of truth from which even the Bible and the Constitution derive their authority. It is here, at this same fountain-head from which flow the laws of nature and the unalienable rights in the Declaration, that humans must measure the actions of their government and the orientation of their souls. To blindly follow the law, though rooted in the Constitution, is to be dismissive of that fountain-head and derelict to one’s essential moral duty. Taking a cynical view, Thoreau writes that to regard the Constitution, “with all its faults,” as one of those “very admirable and rare things, to be thankful for,” one must necessarily see it “from a lower point of view” (Thoreau 1870). He is no doubt referring to the United States Constitution’s accommodation to slavery: the Three-Fifths Clause, the Migration and Importation Clause, the Fugitive Slave Clause, and the Prevent Clause in Article V. Much as government itself, the Constitution is a mere expedient, and law, says Thoreau, “never made men a whit more just” (Thoreau 1858). If the law, or the government, is to become an agent of the evil and injustice of slavery, majority opinion notwithstanding, then Thoreau “cannot for an instant recognize that political organization as [his] government which is the slave’s government also” (Thoreau 1858). He admits to no feelings of duty or loyalty to the American government, especially in light of the evils of the Mexican War and the perpetuation of slavery. Thoreau’s sense of duty is to a higher source, to that same God of nature referred to in the Declaration. Yet he does not wish to devote himself to eliminating the wrong, only that he “wash his hands of it […] and not give to it practically his support” (Thoreau 1862). The purpose of his disobedience, therefore, is not to become a crusader for the overthrow of government, but to “avoid complicity in injustice or wrongdoing,” and convince his fellow citizens to do the same.

Recognizing that some government is necessary, Thoreau asks for “not at once no government, but at once a better government” (Thoreau 1858), a government that operates upon the highest moral principles and not the rule of the strongest. And democratic majorities are not the solution. Thoreau declares that a government in which the majority rules “in all cases cannot be based on justice” (Thoreau 1858). If the majority of citizens are in favor of slavery does that make it just? Is any law just simply because it has been anointed by the majority? Much as James Madison acknowledges in Federalist No. 10, that a majority “actuated by some common impulse of passion, or interest, [may very well effect laws and actions which are] adverse to the rights of other citizens, or to the permanent and aggregate interests of the community” (Hamilton 72), Thoreau does not see majority rule as necessarily grounded in virtue and justice. Democratic majorities, viewed so often as the end-all of modern civil governments, are no guarantee against oppression. Instead, he seems to say that moral authority carries more legitimacy than majority opinion when he calls upon abolitionists to “effectively withdraw their support, both in person and property [taxes], from the government of Massachusetts, and not wait till they constitute a majority of one,” reminding his fellow citizens that “any man more right than his neighbors, constitutes a majority of one already” (Thoreau 1863). What Thoreau is saying here is that once a man has searched his soul and found within it the moral truth endowed by his God, that moral truth is all the legitimacy he needs to act with confidence. Moral right transcends democratic majorities, and when a law requires one to be “the agent of injustice to another, then, [Thoreau says] break the law” (Thoreau 1863). “Action from principle” (Thoreau 1862), he declares, charging himself with the responsibility of making sure that he does not “lend” himself in any way to “the wrong” which he “condemn[s]” (Thoreau 1863). This, of course, he does by refusing to pay taxes and spending a well-known night in jail for his refusal. Not supporting what he feels is an illegitimate government by withholding paying taxes is precisely what Thoreau suggests his fellow citizens do.

After going to considerable lengths to point out the limitations of democratic majorities in the final paragraph of the essay, Thoreau accedes to the idea that democracy is at least more respectful of the individual than a “monarchy” or a “limited monarchy” (Thoreau 1872). But further improvements are necessary, in his view. Even democracy is not the end-all of governmental regimes, and citizens must not be lulled into thinking it is. Instead, they must learn to go beyond the ballot box in holding their government accountable. Thoreau’s ideal system seems to be one in which the individual is unquestionably sovereign and supreme, one in which the wellspring of political power from which all governmental authority is continuously derived and whose authority over any citizen can, by rights, be withdrawn and rescinded at any time by that citizen whenever an appeal to higher truth and morality show the government left wanting. Michael Zuckert puts it well: “The rightful power to unmake and remake government is the strongest and most persistent token of the inalienability of rights” (Zuckert 25). Indeed it is essential if natural law and government by consent are to have any meaning whatsoever. No doubt Thoreau would add the power to withhold one’s support, whether in the form of taxes or otherwise, and the power to engage in non-violent civil disobedience.
Conclusion

In his *Speech at Independence Hall* on February 22, 1861, Abraham Lincoln proclaimed: “I have never had a feeling politically that did not spring from the sentiments embodied in the Declaration of Independence” (Lincoln 705). Aside from being the “most masterfully written state paper of western civilization,” America’s Declaration of Independence has arguably been the most influential state paper as well. Although the United States Constitution is highly esteemed and aspects of it are frequently modeled, the Declaration, with its soaring rhetoric of rights and equality, has captured the imaginations of countless people since that fateful day in July of 1776 that catapulted Thomas Jefferson to the summit of historical figures. The principles of the Declaration have deeply colored the thinking and writing of those on the forefront of rights movements—from Elizabeth Cody Stanton’s *Declaration of Sentiments* at the Seneca Falls Convention in 1849, to Frederick Douglas’s *What to the Slave Is the Fourth of July?* speech, to Martin Luther King’s famous speech from the steps of the Lincoln Memorial over one-hundred years later. For over two centuries the words and principles of the Declaration have provided both the benchmark and the inspiration for freedom and fundamental human rights.

The literary works examined in this essay are a small, but important, sampling of the American writers whose works contain the influence of the Declaration’s principles. Herman Melville, Margaret Fuller, and Walt Whitman are some others, and one could certainly find many more. The role these writers played, and still play, in inculcating new ideas and issues into the minds of their readers, while not precisely measurable, is no doubt substantial. “Law requires, art inspires,” as Steven Olsen-Smith so aptly puts it (Olsen-Smith), and an inspired reader is a more receptive and actively engaged reader. Capture the imagination, as the literature of America’s nineteenth-century writers surely did and still does, and the mind, along with certain values and perspectives, will follow.

Acknowledgements

This research was funded by a grant from the Ronald E. McNair Scholars Program at Boise State University. The author wishes to express his appreciation to the McNair Scholars Program and its staff, and to his faculty mentors: Dr. Steven Olsen-Smith and Dr. Scott Yenor.
References


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