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We Never Will Be the Aggressor: Gender Ideologies, Suffrage, and the Pacific Northwest

by Jessica Derleth

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History

Through the voice of a fictional character, novelist Mary Murdoch Mason described women of the 1870s as fitting within three different categories: the “giddy butterflies,” the “busy bees,” and the “women’s righters.” “The first,” Mason wrote, “are pretty and silly, the second plain and useful, the third mannish and odious. The first wear a smile at you while waltzing; the second wear aprons and give you apple dumplings; and the third want your manly prerogatives, your dresscoat, your money and your vote.”¹ Though infinitely different from one another, each of these classes of women existed within, and interacted with, gender ideologies of the late nineteenth and early twentieth century. Although Mason wrote as a middle class woman in Chicago, her words resonated around the country, sparking discussion as far as Oregon’s Willamette Valley.²

When superimposed upon the Pacific Northwest, Mason’s words shed light upon a region in transition. First-generation settlers of that western frontier had brought with them a set of ideals and standards by which men and women were to operate. The “busy bees” of second-generation Oregonians held fast to the ideals of their parents, becoming homemakers while husbands toiled in the office or field. “Giddy butterflies” redefined middleclass womanhood through their embrace of a growing consumer

culture. And a smaller, yet highly significant, portion of second-generation Oregon women stepped into the public sphere in their quest for political rights, becoming “women’s righters.”

As the move for female enfranchisement stirred the waters of gender ideology, these three proposed classes of women were most often discussed, defined, and debased within the suffrage debate. Histories and popular images of this political issue are often overly simplified in their imagining of suffragists and anti-suffragists. Women opposed to suffrage were not necessarily reactionaries who feared progress,³ while suffragists were not necessarily crusaders who overcame stagnant societal conventions. Each movement comprised people with different ideas about the exact nature and role of women. Despite a wide range of gender ideologies among suffragists and anti-suffragists, few, if any, challenged the belief of a fundamental distinction between the sexes; both suffragists and anti-suffragists manipulated and adapted the image of woman for their respective causes, making her into what they needed her to be.

Separate Spheres

As America moved into the nineteenth century, society saw the rise and propagation of a new set of gender roles, based partially on books such as Thomas Gisborne’s *Enquiry into the Duties of the Female Sex*. This trend was aided by the process of industrialization that sent men to work in factories, rather than in or near the home, while women’s production for the family—in the form of butter, candles, clothing—was less essential with the mass production of such items. With less of a clear role in the family, many women seized upon the idea of separate spheres, developing a philosophy in which men and women are destined to operate in separate spheres of action.⁴ Through a torrent of national newspapers, magazines, and novels the separate spheres ideology spread throughout the country.

A combination of authors and editors led to the eventual image of men as daring, aggressive, and intelligent, while women were constructed as submissive, dependent, and emotional. The new philosophy drew lines between what was deemed masculine and feminine, crafting standards that had not existed before.⁵

The “Modern Woman”

The suffrage movement brought forth a new “modern woman,” the fabled “women’s righter.” Many women had begun to gain a sense of their own disenfranchisement when they sought to participate in other reform movements—antislavery, labor, and temperance—but were excluded from male organizations.⁶ The second generation of Oregonians were ideologically diverse; some upheld older gender roles while others questioned current modes of thought. Abigail Scott Duniway, one of the leading suffrage organizers in the Pacific Northwest, was strongly influenced by her experience crossing the West on the Oregon Trail. During that rigorous passage, Duniway’s mother died and Duniway herself subsequently did much to care for her family. She saw women as living in an oppressed state as they had unequal treatment before the law, in politics and the work place. Though she never wholly rejected differing gender roles nor the notion of women’s character being innately different from men, she fought against many of the barriers put before women because of their sex. For Duniway, a true suffragist was one who based the right to vote “upon the broad basis of ‘equal right to all and special privilege to none.’”⁷ For many, however, the mere notion of a woman standing up and demanding greater equality stretched the boundaries of what a woman ought to be; a woman who stepped into the public realm challenged the notion that women belonged within the private sphere, tending to home and hearth.

In October 1895 the *Oregonian* reviewed an article, originally published in the *American Naturalist*, that considered the behavior and temperament of the “modern woman,” who also often filled the role of suffragist. This female could only be described as an entity that harkened back to barbaric, matriarchal systems that held no positive connotations. The article described matriarchy as “‘the necessary consequence of relaxed sexual relations of savage tribes’ wherein inheritance and descent followed the maternal line because of uncertain paternity.”⁸ The article defined the modern woman, she who sought greater independence and autonomy, as not only savage and backwards but as a sexual oddity. Its authors went so far as to state definitively that all equal-rights women have displayed evidence of both masculinity and femininity and are known to be “physically or psychologically degenerate, or both.”⁹ That argument expressed a concern not only about the possible effects of the ballot but also the quality of those who wished to obtain it. It was not the ballot that corrupted those women—they already possessed a defect. The article, and presumably those at the *Oregonian* who wished to reproduce portions of it, contended that any woman who went so far as to desire the vote was not only masculine in nature, but also suffered from some sort of degeneration.

Laws of Nature

The laws of nature were integral to the arguments of many suffragists, especially when confronting the division between the genders. Most women who were anti-suffragists did not accept the idea that women were in any way inferior to men, but simply built for a different purpose in life. The separate spheres of man and woman were, in fact, believed to be part of an evolutionary process. As one Oregon anti-suffragist explained the point: “We believe that God has wisely and well adapted each sex to the

proper performance of the duties of each.”¹⁰ Nature had provided men with the physical attributes necessary to provide for and protect a family, while women were designed to care for and continue the species. Moving such a theory into a modern world meant that men entered the workforce while women maintained the family. That view accordingly saw woman’s assignment to the home not as a form of confinement but as a blessing, a place she inhabited. A woman’s sphere, as one anti-suffragist explained, was an “atmosphere of home, of wide and intelligent sympathy, of tender charity and ministry to others, of influence beyond all computation.”¹¹

To go against this natural divide between man and woman was thought to have potentially devastating consequences. Abigail Scott Duniway did much to lead the movement and was, consequently, viewed by some as the negative outcome of defying convention. Through her Portland newspaper, *The New Northwest*, she gained her reputation, advocated enfranchisement, kept readers abreast of women’s news, discussed other reform movements, and found herself many opponents. One *Oregonian* opposed the newspaper’s publication because the “teachings of the *New Northwest*, unsettling in the minds of women and sacredness of the marriage relation” will bring them out of their homes and “into the ways of men, where their modesty must become unsexed, and their virtue be constantly assailed.”¹² Many expressed the fear that if women obtained the ballot, a heretofore masculine task, she would not be able to retain her feminine qualities.

While Abigail Scott Duniway worked on the *New Northwest*, her brother Harvey Scott was editor and part owner of the *Oregonian*. Like many Oregon newspaper editors, Scott expressed great concern over what would occur were women to vote, and how they would be affected by the process. Scott’s greatest fear appeared to be the change women would go through, in thought and action. He once wrote:

if she becomes a voter with determination really to govern... then to become a governing, forceful woman she must become a masculine woman, which ultimately means a desheltered, desexed woman, a political fishwife abroad and a kill-joy in the home.¹³

Many spoke as though such results were an obvious result of female suffrage. In a pamphlet issued by the Oregon Association Opposed to the Extension of Suffrage to Women, the authors stated that “because female suffragists will not heed the voice of nature they are unsexing themselves.”¹⁴ Such straightforward language conveyed the idea that one naturally led to the other.

[Not] the Normal Girl

The arguments of anti-suffragists were not always centered on gender ideologies or quick assumptions. In fact, great diversity existed among those who spoke out against suffrage. Some feared that moralistic women would infringe upon the liberty of working men. Others felt that a woman would vote in line with her husband, rendering her vote irrelevant. Still others felt that a woman was more effective working within all-female organizations, thus creating change in an arena separate from men.¹⁵ Yet despite the nuances of many arguments, some simply could not overcome the adaptation to gender ideology that was necessary for the reform to succeed. Alongside those who feared a blending of masculinity and femininity were those for whom the issue boiled down to what was normal. An Oregon anti-suffrage pamphlet, for example, talked about the instinct for women to remain in the home and “the natural expectation of every normal girl should be that sooner or later she will marry and leave her work.”¹⁶ That claim echoed the sentiments of many national anti-suffragists who recognized that women often had to work outside of the home, but maintained that it was not the preferred, normal, or natural

situation. Critics of suffrage often acknowledged that for practical reasons a woman had to become a paid worker because she was not yet married and the family needed the extra monetary support, she was helping to pay for her education, or was merely biding her time until the proper suitor came along. In any case, most did not expect a young girl, maturing into womanhood, to maintain a job for more than a few years. Agreeing with the Oregon anti-suffragists, one national pamphlet explained that “the instinct of the normal woman is not to work for somebody for wages, not to compete with men in business or the professions, but to form a life partnership with some man and raise a family.”¹⁷ To go against a force as powerful as nature risked corrupting womanhood itself.

Corrupting Power of the Ballot

Those speaking out against extending the ballot may have worked against the furthering of women’s rights, but they often extolled the “fairer sex.” As one Oregon newspaper put it, “women in their true state are pure, honest, devoted, and reliable.” That elevated position of women, however, was not easy to maintain for, as the article continued, “once debased, whether by politics or other cause, [women] are indeed most vicious creatures.”¹⁸ Some anti-suffragists developed their view of their opponents based on a few select individuals. A rival editor of Duniway once wrote that “while we must acknowledge that women are angels at home, we much fear that at the polls as in the printing office they will be more or less under the influence of the devil.”¹⁹ This pointed attack on Duniway was likely in response to her harsh newspaper tactics. She was not afraid to air unpopular opinions and to compete with the newspaper men of Oregon. Women traveling between the two spheres crossed a line between heavenly and devilish influences. In the home woman possessed a beneficial and uplifting quality, but when “ambition or accident have carried her beyond

her sphere, the transfer has wrought evil to man, and wreck to woman."²⁰ The alteration of gender ideologies was not only threatening to the division between the sexes but the family and society at large.

Woman's position in the family was important because of the impact family was said to have on a child. The morals and behavior of a child's caregiver were seen as a map to where the child would go. At times, that line of thought was the basis of arguments that suffrage was unnecessary. If men were raised properly, then they would accurately represent their families through the vote. Furthermore, if women did their jobs properly, then they could raise children who would make appropriate political decisions thereby voiding a woman's need to have a direct vote. With family being of the utmost importance, some anti-suffragists feared that the "more sacred duties of home, religion, and education, will be sacrificed to the more engrossing excitement of politics; [sic] and we will have a grotesque, ill-informed nation, where women are never mothers."²¹ Woman was the basis of family upon which stood the lives of children, high morals, correct political action, and society itself. Many women argued against their own enfranchisement because they felt their lives and duties were great enough and of sufficient difficulty that another duty should not be added. Oregon anti-suffragists feared not only the changes that would be brought to women but also men and the greater good. One anti-suffragist explained that "the courtesies and amenities of life which are now felt to be due from man to woman would soon cease to exist, resulting in the practical unsexing of **men** and women by destroying the sanctity and privacy of the family circle and home life, upon which depend the virtue and welfare of humanity" [emphasis added].²²

Building up the Suffragist Image

As the suffrage debate continued into the twentieth century, arguments about the nature of woman and her interaction with the ballot flourished.

American society at that time was composed of various types of women who seemed to live conflicting lifestyles; some enjoyed the arts and education, others desired work, and some settled into married life. Many saw the different groups of women as being at odds with one another, but one suffragist explained that the groups could, in fact, be reconciled. Another way of looking at different groups of women "has developed within the last few years; one that does not bar out the creative joy of work, nor the aesthetic satisfactions of art, nor the emotional satisfactions of marriage. It may easily include all three; it often does. Women may become suffragists."²³ Against charges of being desexed, masculine women, suffragists had to reassure the public that women could operate in multiple domains that included the workplace, academia, and the traditional institution of marriage. Suffragists often reminded a skeptical public about the large contributions women had made to virtually every field of human activity. Women had taken on many tasks during times of war, often at great personal risk. Literature and the arts were full of female accomplishments. The protection of the home and children was left in the hands of mothers, a task that often involved facing the challenges of insufficient goods and inadequate sanitation. One suffragist argued that "there has never been any question of her readiness to undertake new and larger activities, as long as they have left her dependent."²⁴ Suffragists pushed the public to recognize the abilities of women, what they had done and what they may yet be capable of doing. Perhaps by highlighting the accomplishments of the "fairer sex," it was possible to show what women had accomplished while maintaining their femininity.

Lucy Stone

Beyond showing what women of the past had accomplished while maintaining their femininity, suffragists wanted to show that modern

suffragist leaders continued that tradition. In the national movement, Lucy Stone and Susan B. Anthony were two of the leading suffragists whose gender and sexuality came under intense scrutiny. Much of the criticism directed towards Lucy Stone resulted from her decision to refuse many marriage proposals (though she eventually married Henry Blackwell after his assurance of an equal partnership). Further public criticism derived from her adoption of the reform dress, otherwise known as the bloomer. Along with a good number of women at the time, Stone chose to wear trousers underneath a skirt several inches shorter than traditional fashions. Stone and others found the style to be comfortable and practical, especially when traveling the lecture circuit. Her choice in clothing, as well as her short hair, left many with the impression that Lucy Stone was one of the fabled masculine suffragists. Historian Joelle Million has noted that such fashions sparked much debate within the movement, and that newspapers expressed surprise that Stone appeared quite feminine despite her choice of attire.²⁵ Those helping to run the campaigns that Stone spearheaded worked to assure the public that suffragist leading ladies were of the feminine sort. Many reform papers, for example, described Lucy Stone as a political, yet womanly, being. The *Pennsylvania Freeman* wrote that “her manner was not only free from offensive boldness, but gentle, calm, dignified, earnest,” and that during her speech she “had not in any degree compromised the modesty belonging to her sex.”²⁶ Stone may have pushed the boundaries of societal conventions but, as the movement hoped to emphasize, she was a lady in every sense. And though her advocacy was of the utmost importance, the suffrage movement worked to assure the public that her words and thoughts were “exceedingly chaste and beautiful.”²⁷

Susan B. Anthony

Perhaps more of a threat to femininity than Lucy Stone was Susan B. Anthony. She not only toured the country giving public lectures but also

did so alone for many years without entering into matrimony. Along with the typical charge of masculinity, Anthony faced a great deal of ridicule for remaining single. As Anthony toured the Pacific Northwest with Duniway in 1871, the editor of Oregon City's *Weekly Enterprise* commented:

what a fine looking and useful woman she [Anthony] would have been had she got married years ago and would now be sitting in her parlor surrounded by family of children, grandchildren and perhaps great grandchildren. She would then consider herself the peer of any woman. We wish she had been more fortunate in her younger days.²⁸

A large part of the campaign for suffrage necessarily focused on creating and maintaining the reputation of its leaders, especially in response to the masculine stereotype. As the twentieth century approached, women found it more acceptable to speak in public and demand the franchise but could not entirely avoid being accused of lacking the traditional womanly virtues. Recognizing that situation, Ida H. Harper, a suffragist and Anthony biographer, sought to address the issue by showing the softer side of the famous suffragist in "Miss Anthony at Home," an article for *Pearson's Magazine* in 1903. Harper described her subject as looking "like a lovely grandmother...it wrenches the imagination to think of her standing on a platform and daring a mob, or rising in a court room and defying a United States Judge. She is womanly in every instinct."²⁹ Upon her first stay in Anthony's home, Harper could not help but observe "what a housekeeper is Susan B. Anthony, domestic in every fiber of her body!"³⁰ After years of working with and studying Anthony, Harper expressed confidence that though this woman is bold and accomplished in the public realm, she is as much a womanly woman as any other.

By 1903, Ida Harper was working on her third, and final, volume of a biography of Anthony, a work that totaled more than 1,600 pages. In all

of her documentation, Harper recognized Anthony's accomplishments but maintained that "Miss Anthony never has suggested ways for repairing the damages of society with one-half the skill she employed in teaching her nieces her wonderful method of darning rents in garments and household linen."³¹ After starting various women's organizations, speaking before government bodies, traveling the nation, and spending a life on campaign trails, Anthony's greatest skill, according to Harper, was the darning of towels. Perhaps Harper wrote with full sincerity of this skill and maybe Anthony took great pride in that domestic task. Either way, first and foremost Harper wanted the readers of *Pearson's* to see the domestic ideal in Susan B. Anthony. In fact, Harper noted that Anthony enjoyed the domestic sphere so much that she wished she had nothing to do "but to sit quietly down in my own home and darn stockings and hem towels, and gather my friends about me and have one read while the rest of us listen and then all discuss it."³² Though Anthony was absorbed with the public sphere, Harper worked to rebuild the suffragist image by showing Anthony as a woman who would love nothing more than to stay at home and engage in purely feminine activities.

Suffrage Renaissance

Wise to the fears of the public and the attacks of the opposition, suffragists did much, rhetorically and symbolically, to mold the image of the New Woman. On another level, however, suffrage organizations actively recreated their image through organizational change, new political tactics, and promotion. Many studies of the suffrage movement consider the years from 1895 to 1910 to be a period of inactivity, during which the movement failed to make any ground or win a single state. The "doldrum" period, however, was actually a period of systematic change within the movement that, according to historian Sara Graham, basically amounted to

a "Suffrage Renaissance." Not only did suffragists begin to recognize the need for a new public image, "in response to anti-suffrage propaganda that characterized them as fanatics...[they] attempted to win respect for their cause and legitimize their organization through a variety of tactics."³³ The genesis of change came with modifying the images of suffragist pioneers, such as Susan B. Anthony, and by developing a sanitized version of the past, one free from hints of radicalism. To the displeasure of some founding suffragists, the reinvigorated movement called for the implementation of the Society Plan, one element of which became the goal of the National American Woman Suffrage Association (NAWSA) to enlist the support of middle to upper-class women. To gain the support of such women was to obtain their time, money, and, more importantly, respectability. Movement members generally understood that to counter the image of the radical, masculine, desexed woman, they needed to become more appealing to the average person and women of the upper classes who had money and stature. In short, suffragists had to find the way to obtain both respectability and, ultimately, public approval. By 1910, thanks to the Society Plan and other changes, the radical image of those who pioneered the movement was replaced by a safe, respectable program run via middle class club meetings. This stage of development comfortably brought a wealthy, 'respectable' class of women into the movement, and was seen by NAWSA leaders as necessary for a movement that would eventually win the vote.³⁴

The Most Beautiful Suffragist

To create a new image for women's suffrage, it became important to show the overwhelmingly male voting public what the true New Woman looked like, that she could combine intelligence and grace. As the fervor of suffrage parades and pageantry gained momentum, the movement found a weapon for their cause in the extraordinary beauty of Inez Milholland.³⁵ To

the public eye, Milholland was everything a woman of the early twentieth century ought to be. She combined a more traditional idea of woman that focused on grace, beauty, and femininity with the idea of the New Woman who exhibited outstanding intelligence, self sufficiency, and independence. Placed at the head of parades and marches, Inez Milholland was deemed "The Most Beautiful Suffragette." Historian Ann Marie Nicolosi has argued that Milholland was a "constructed model of acceptable white heterosexual femininity, thereby helping to bring women into the movement who might fear the taint of masculinity and gender transgression."³⁶ Milholland, in fact, garnered a following and celebrity status. Newspapers throughout the country announced her arrival in one city or another, tracking her every move. While the most beautiful suffragette was idolized for her beauty and grace, the public was exposed to the suffrage issue that suddenly seemed much more acceptable.

Selling Suffrage: Sunflowers and Babies

By and large, Milholland functioned as a commodity, something to present and sell to the public as the face of suffrage. Milholland was among a generation of women's advocates who began to truly sell their ideas to the public consumer. According to historian Margaret Finnegan, suffragettes used their status as female consumers to move into the public space, first as department store customers and later as lecturers, aiming to incorporate themselves into traditionally male-centered rituals of active citizenship.³⁷ Pioneer suffragists had pushed their way into the public sphere, but the later generation of reformers swept onto the streets in full parade regalia, highlighting their commitment to traditional standards of femininity. The suffrage parade was the ideal way to combat charges of masculinity and combine a male space with a feminine appearance. A writer with the *Woman's Journal* tried to explain that the parade provides

“a chance to show that woman’s method of accomplishing a purpose may be distinctively and instinctively her own.”³⁸ Though a woman may lack political experience, the author asserted she could contribute by becoming one of many marching along the parade route. Though the movement may not always have women trained to march, “we have women who are trained to teach, who are trained to appeal, who are trained to think...who are gifted with beauty or graciousness.”³⁹ The parade was, to a certain extent, an acknowledgment of the differences between men and women and an assertion that, although women may be of a different nature, they can be brought (beautifully) into the public sphere.

Though the parade functioned on many levels, its main purpose was to show that the suffragette had many virtues: not only was she intelligent, but she was beautiful as well. Knocking down stereotypes was of the utmost importance and often came with the pageant. “As people viewed the parade; they realized for the first time that intelligent, level-headed women are suffrage advocates.”⁴⁰ Grand processions with participants numbering in the hundreds or thousands took place on the streets of New York and the nation’s capital. Smaller towns and communities also realized the value of public display. In late October of 1912, not long before the election granting them suffrage, Oregon suffragists marched through the streets of Medford, Oregon. Capitalizing on the popularity of the county fair, over 100 women marched in the “Made in Medford” parade for the right to vote.⁴¹ Much like their eastern counterparts, the suffragists of Medford realized the necessity of counteracting negative stereotypes and how that could be accomplished by a well-planned march. The short article covering this event emphasized the feel and femininity of the procession and noted that “the suffragists were led by Miss Gladys Heard, secretary of the Medford organization, who drove an automobile decorated with sunflowers and filled with the babies belonging to the Medford suffragists.”⁴² Much like

the beautiful Milholland who led women through the streets of New York, babies and sunflowers ushered suffragettes through the streets of Medford; both served as symbols of femininity, a reassurance to the public that the women who followed were truly womanly women.

Dealing with Duniway

For women of the suffrage renaissance, recreating the image of the New Woman within the Pacific Northwest was sometimes a difficult thing to do, especially when confronted with a stubborn regional leader who preferred the more aggressive, less feminine, rules of engagement. For many successive elections, for example, Duniway worked for enfranchisement through a narrower, more traditional method that focused on giving speeches and gaining the support of high-ranking politicians and newspapermen, rather than rallying the public with marches and events. Also, when running the *New Northwest*, she actively employed the "Oregon style" and joined other editors as they freely and often slanderously attacked one another.⁴³ While such aggressive tactics proved fruitful, though controversial, in the world of journalism they did not fit with the reforms necessary for the "suffrage renaissance." Duniway, however, was adamant in her approach, showing little approval for building up lists of supporters, aligning with upper-class women, and utilizing local clubs and organizations. By 1900, the unwillingness of Duniway to adapt the tactics of the national movement led many, including Susan B. Anthony, to believe that she was the reason for the lack of progress towards suffrage in Oregon. The beginning of the century brought with it an attempt by the national leaders to unseat Duniway from her position of control within the region. Such efforts were spurred on by Duniway's inability to project the proper image of the non-radical, feminine suffragist. She continued, for example, to use harsh, blunt language: "A woman who doesn't like men is

always a vinegary, cross-grained creature, who owes an apology to men for living. She ought to steal away and die.”⁴⁴ NAWSA had decided to focus on state-by-state campaigns to gain suffrage with special emphasis on the progressive Northwest. Therefore, “NAWSA knew that it was absolutely necessary to establish a new and cooperative Oregon leader.”⁴⁵ Though Duniway continued to participate in the suffrage movement of Oregon, the national leaders took on a much greater role in steering the state toward its 1912 adoption of female suffrage.

Introducing Emma Smith DeVoe

To steer the suffrage movement more effectively in the western United States, those from the national organization saw to it that a few of the right people were in place to run campaign drives. Emma Smith DeVoe, who lived by the motto “always be good-natured and cheerful,” was sent to the West Coast to be an example of the proper suffragist. Her initial step into the region occurred because a national organizer, Carrie Chapman Catt, felt that DeVoe’s feminine political style would be popular among the citizens of Idaho. DeVoe was indeed well received across the country and the Pacific Northwest because she shared the ideals of many suffragists, as well as those skeptical of the movement. DeVoe, for example, believed strongly in the idea that men and women were different. Because gender divisions were important, she painstakingly created a feminine image for herself, helping to counteract the negative caricatures of suffragists.⁴⁶ Like many others in the Northwest, DeVoe felt that if women ought to enter the world of politics, they should do so in a feminine fashion, avoiding any method too aggressive and unladylike. After moving to the Northwest, DeVoe became involved in the 1906 Oregon woman suffrage campaign. National leaders assigned her to work in small, rural, Oregon towns where her womanly manner would not alienate men at the voting booths. Overall,

her methods were extremely popular with Oregonians, especially those of the middle and upper classes.⁴⁷ Those of a wealthier status often clung to traditional gender roles, and DeVoe, with her feminine appearance, singing voice, and non-aggressive speaking style, was able to reassure them.

Though DeVoe fit the image of femininity, she was a shrewd political operator who strategically capitalized on her appearance and the methods of the reinvigorated suffrage movement. While working in Washington, DeVoe called a meeting of women from various influential women's clubs to discuss the formation of a local branch of the Equal Suffrage association. DeVoe clearly utilized the Society Plan. Attracting the support of wealthy society women, as a local newspaper reported, "lends more prestige to the movement which is comparatively new in Spokane."⁴⁸ DeVoe made it clear to all those who listened to her that she was asking for the vote, not demanding it. She explained that such tactics, befitting a lady, were necessary and that all campaigns will "be carried on in a woman's way." DeVoe continued to explain that "we do not seek in any way to usurp the privileges of men. We are womanly and the more womanly we can be the better for our cause."⁴⁹ While she was clearly seeking the widening of women's power, DeVoe wanted to reassure the public that there was no desire to challenge the role and position of men. Perhaps directly addressing anti-suffragist concerns, she said "we will work with the men, not against them, just as the different members of a family work in different ways for the same end—the happiness of all." DeVoe projected herself not only as feminine and womanly but also as one who valued the status quo of the family, its composition, and its functions. In all, DeVoe directed much of her work toward reforming the image of suffragists. She may have even felt her work was necessary because of how earlier suffragists had conducted their campaigns. "While the early women suffragists did not carry on their work as we are doing," she commented, "we are thankful

for what they did, even though it has evoked much adverse criticism and has caused some to look on all women suffragists as unpleasant people.”⁵⁰ With those words, DeVoe responded to the claims of masculinity from the anti-suffragists and rejected the efforts and tactics of the suffragists who fought prior to the “Suffrage Renaissance” and its emphasis on femininity. In this new method of fighting for suffrage, it was no longer acceptable to demand the vote or scream before a crowded lecture hall.

Suffragists and Gender Ideologies

The fight for suffrage was not always solely about the advancement of women’s rights, and those fighting for the cause were sometimes as different from one another as they were from the anti-suffragists. By the turn of the twentieth century, suffrage had truly become a diverse movement as the renaissance women and the more conservative women of the temperance movement joined the “pioneer” suffragists. At the national level, those supporting the push for female enfranchisement expressed a variety of ideas about men, women, and proper behavior. A popular strand within the movement held that women ought to enter into politics so that they might work as a cleansing agent. Women were, after all, considered by many to be the protectors of morality and purity. Many women seeking to enter the public arena hoped to do so not to challenge male dominance but to clean up the mistakes left by their fathers and husbands. Oregon Governor Oswald West believed in suffrage and felt that women would be nothing but a positive influence:

Did you ever notice that women are always cleaning up? They are either cleaning the house, cleaning up the baby, or cleaning up after their husbands. Well, when they get the ballot I think we have every reason to believe they will help clean up politics, and conditions generally in their State, county and city.⁵¹

Purity and cleanliness, those womanly virtues, were reasons that many encouraged the political inclusion of women. For example, even when pushing to enter the male sphere some said it was for the purpose of providing feminine care. Women asserted that the work of the fathers would always be needed, but also needed was “the power of the mother to take care of the world, which is what we are here for.”⁵² Although that author may have been deemed progressive in many ways, she still held to the notion that women are meant to care for others (or even the world). Another author, writing for a national suffrage publication, described the unchangeable nature of her sex as exhibited in a parade that “will also try to show that the virtues and principles for which women have always stood, and will continue to stand—since they cannot change the nature of their being—are Justice, Charity, Liberty, Peace and Hope.”⁵³ That suffragist, along many others, agreed with anti-suffragists in subscribing to the idea that God created men and women with different but complementary character traits (though that did not bar them from political participation).

Whereas some suffragists and anti-suffragists alike would describe this situation as ideal, many spoke out against the tendency to turn a woman into an “ignorant Goddess, that pedestalled, uncrowned Queen of the Home, half angel and half child.”⁵⁴ Many held the belief that women belonged on the same plane as men in every way. Some thought that the “true nature” of women was merely a societal construct. The idea, for example, that women lacked the capacity to participate in or conduct a war was a notion based on assumptions and tradition, not truth or ability. One national suffragist asked, “if there had not been something interesting and exciting and stimulating about war, wouldn’t we women have had to do it long before this—at a reduced wage?”⁵⁵ Many such national suffragists rejected the idea of an essential “womaness” and held that they were capable of just about anything they were allowed to attempt. They were

those who demanded equal suffrage primarily as human beings, not as women.⁵⁶

Perhaps the greatest evidence of women's capabilities came from looking at what they had already done:

Women—real women, men's mates—have throughout the ages done strenuous, hard, cruel, toilsome, productive work. In our own land they have born and reared children, kept their homes, wrestled with wilderness and the desert, loaded guns, outwitted Indians and done a thousand heroic things without stopping to ask, 'Is it ladylike?'⁵⁷

The author of that sentiment, writing in a national publication, pointed to the West and the example of pioneer women to show exactly what her sex is capable of doing. Though women were often expected to remain passively in the home, experience and history had shown that she was capable of great and difficult things. Such was the situation from which Abigail Scott Duniway arose to become a major leader in the Pacific Northwest. Perhaps as a combination of pioneer spirit and a strong personality, Duniway was a strong woman. For years she actively engaged in the suffrage movement and published many frank, harsh opinions in her newspaper. Duniway often had a difficult time maintaining the image and behavior of a "true woman" as readers and editors not only attacked her message but her personal life, questioning whether she was doing right by her family while dallying in the public sphere.⁵⁸ Duniway, however, maintained that every woman is "an individual, complete and sovereign in herself."⁵⁹ She did not believe that a woman had an essential nature, but that a woman's capabilities were based on her individual characteristics not simply on her gender. The demand for suffrage, Duniway said, should come only from one's right to possess political equality. "Whenever she demands the ballot, not simply because it is her right to possess it, but because by its use, she expects to

reconstruct the genus man by law, on the basis of her own choosing, she only succeeds in driving nails into the closed coffin lid of her own and other women's liberties."⁶⁰ Suffrage must be fought, she said, on behalf of political equality, not female moral superiority.

Though Duniway was certainly progressive in many ways, she was not completely free from the gender ideologies of her time. Like many others involved in the movement, Duniway often had to defend her femininity and her actions. A fan of the "Oregon style" of journalism, she debated with and slandered other newspaper editors. She defended her harsh language as necessary retaliation. "God Almighty," she said, "gave us combativeness with which to defend womanhood, and though we never will be the aggressor, we stand to rend an antagonist when he deserves it—if the encounter does make us sick."⁶¹ Here Duniway backed her right for a certain level of self-defense, yet she did not put her sex on the same level as men. Women are given a power, she said, but never to take an aggressive role. Women are ready to fight, but only to fight back. And, though Duniway took action, she hastily explained how physically taxing such an act actually was.

When Oregon was faced with hard economic times, Duniway wrote a series of articles advising the public on how to survive the hard times. Though her advice was economic in nature, it revealed a great deal about her conception of proper gender roles. One of the more thorough recommendations was an arrangement in which groups of men and women would pool resources and establish their own community for financial and emotional support, a proposal that basically amounted to a commune. As she described that ideal arrangement, Duniway envisioned jobs for certain kinds of persons. "The clerk and treasurer of the board should be a woman," she said. "The work is neat, and easy on the brain and muscles and requires much care and comprehension as to details."⁶² In her proposal,

she valued the work of women but believed women capable only of tasks that were “easy on the brain and muscles.” Though Duniway advocated greater appreciation and recognition of her sex, she remained unwilling to move women out of their sphere of natural duties.⁶³

Conclusion: Complexities of the Suffrage Debate

Abigail Scott Duniway serves as an example of the complexities of the suffrage movement with its defiance of cultural norms, emphasis on femininity, and expectations of greater power and autonomy while consigning women to delicate tasks. The history of the Pacific Northwest as the frontier cannot be forgotten, as the first generation of Oregonians who crossed the trail would be the first to truly confront the issue of woman suffrage. Time on the trail created strong women such as Abigail Scott Duniway and proved to others that women were capable of facing such harsh conditions. But, though it was necessary to function outside of specific gendered tasks, the first generation of Oregonians fought hard to maintain separate spheres and traditional gender ideologies. Therefore, as the suffrage debate developed, Oregon society was a combination of those wishing to maintain traditional, Eastern gender roles and those who were inspired to seek autonomy after the settling of the West.

The battle over suffrage was not simply a clash between right and wrong, or the progressive and the traditional. Anti-suffragists sometimes felt women were incapable of the mental vigor necessary for political participation. Others felt God had ordained that women stay within the confines of the home. Many, however, felt that a woman was just as capable as any man, but ought to continue focusing on women’s organizations that were already established and had proven to be beneficial to society. Some suffragists often defended their right to enter any sphere of action, admiring, for example, the military action of Joan of Arc or Cleopatra.

Many felt that women ought to marry but should not be kept from exploring their abilities through work or education. Still others, regional leaders for example, believed women to be independent creatures but not able to act aggressively or handle many professions. Gender ideologies existed in one form or another among all reformers and every member of the opposition, with little challenge to the belief of a fundamental distinction between the sexes.

In Oregon and across the nation, suffrage was not only an ideological clash but also a political battle. People voiced true concerns about the natural role of men and women and legitimate fears about the structure of the family. But moving beyond schools of thought, both sides of the debate used the questions surrounding gender as ammunition. Anti-suffragists preyed on public fears by predicting the downfall of society, the loosening of morals, or merely the possible changes to everyday normalcy. Suffragists, realizing what they were up against, worked to change their public image. Duniway, too harsh for the image of womanly suffragists, was pushed to the side as others formed parades, with beautiful women in front and babies by their sides. In some respects, the suffrage debate had less to do with whether women naturally belonged in the public or private realm but more with what she ought to do in each arena. Neither side truly challenged gender ideologies or a fundamental distinction between the sexes, but each used and manipulated the image of womanhood for the advancement of their respective causes.

Notes

1. Cynthia Culver Prescott, *Gender and Generation on the Far Western Frontier* (Tucson: University of Arizona Press, 2007).
2. See *Albany Evening Democrat*, 20 January 1876.
3. See Manuela Thurner, *Better Citizens Without the Ballot: American Anti-suffrage Women and Their Rationale During the Progressive Era*. 1993. *One Woman, One Vote: Rediscovering the Woman Suffrage Movement*. Ed. Marjorie Wheeler (Portland: Newsage Press, 1995).
4. Joelle Million, *Woman's Voice, Woman's Place: Lucy Stone and the Birth of the Woman's Rights Movement* (Westport, CT: Praeger Publishers, 2003).
5. Ibid.
6. Karlyn Kohrs Campbell, *Man Cannot Speak for Her: Volume I; A Critical Study of Early Feminist Rhetoric* (Westport, Connecticut: Praeger Paperback, 1989).
7. Roberta McKern. *The Woman Suffrage Movement in Oregon and the Oregon Press* (Thesis, University of Oregon: 1975).
8. *Oregonian*, 20 October 1895, 4.
9. Ibid.
10. "An Appeal to Voters and Arguments Against Equal Suffrage Constitutional Amendment" issued by Oregon State Association Opposed to the Extension of Suffrage to Women (Portland: 1906).
11. Ibid.
12. Ruth Barnes Moynihan, *Rebel for Rights, Abigail Scott Duniway* (New Haven: Yale University Press, 1983).
13. *Oregonian*, 28 May 1900, 4.
14. "An Appeal to Voters and Arguments Against Equal Suffrage Constitutional Amendment" issued by Oregon State Association Opposed to the Extension of Suffrage to Women (Portland: 1906).
15. Thurner, *Better Citizens Without the Ballot*.

16. "An Appeal to Voters and Arguments Against Equal Suffrage Constitutional Amendment" issued by Oregon State Association Opposed to the Extension of Suffrage to Women (Portland: 1906).

17. "Woman Suffrage" National Anti-suffrage Association. Washington D.C.: U.S. Government Printing Office, 1916.

18. *Northwest News*, 2 June 1884, 2.

19. *Plaindealer* (Roseburg, Oregon), 14 July 1871, 2.

20. "An Appeal to Voters and Arguments Against Equal Suffrage Constitutional Amendment" issued by Oregon State Association Opposed to the Extension of Suffrage to Women (Portland: 1906).

21. Ibid.

22. Ibid.

23. National Woman Suffrage Association, "Twenty-five answers to antis; five minute speeches on votes for women by eminent suffragists." (New York, 1912?).

24. Ibid.

25. Million, *Woman's Voice, Woman's Place*.

26. As quoted in Million, *Woman's Voice, Woman's Place*.

27. Ibid.

28. *Weekly Enterprise*, 15 September 1871.

29. Ida Husted Harper, *The Life and Work of Susan B. Anthony* (Indianapolis: Hollenbeck Press, 1908).

30. Ibid.

31. Ibid.

32. Ibid.

33. Sara Hunter Graham, *The Suffrage Renaissance: A New Image for a New Century, 1896-1910. One Woman, One Vote: Rediscovering the Woman Suffrage Movement*. Ed. Marjorie Wheeler (Portland: Newsage Press, 1995).

34. Ibid.

35. Ann Marie Nicolosi, "'The Most Beautiful Suffragette': Inez Milholland and the Political Currency of Beauty" *Journal of Gilded Age and Progressive Era* 3 (2007): 286-309.

36. Ibid.

37. Margaret Finnegan. *Selling Suffrage* (Columbia: Columbia University Press, 1999).

38. Glenna Smith Tinnin. "Why the Pageant?" *The Woman's Journal* (15 February 1913): 50.

39. Ibid.

40. Ibid.

41. "Sunflowers and Babies in Oregon Campaign," *The Woman's Journal*, 26 October 1912: 342.

42. Ibid.

43. Roberta McKern, *The Woman Suffrage Movement in Oregon and the Oregon Press* (Thesis, University of Oregon: 1975).

44. Duniway Scrapbook 1, Duniway Collection.

45. G. Thomas Edwards, *Sowing Good Seeds: The Northwest Suffrage Campaigns of Susan B. Anthony* (Portland, OR: Oregon Historical Society Press, 1990).

46. Jennifer Ross-Nazzari, "Emma Smith DeVoe: Practicing Pragmatic Politics in the Pacific Northwest," *Pacific Northwest Quarterly* 2 (2005): 76-84.

47. Ibid.

48. *Evening Chronicle* (Spokane, Washington), 22 February 1908: 9.

49. Ibid.

50. Ibid.

51. "Oregon Honors Mrs. A.S. Duniway: Pioneer Mother of Suffrage in Northwest Honored in Birthday Anniversary—Tributes from Enfranchised States" *The Woman's Journal* [Boston] (9 Nov 1912): 355.

52. National American Woman Suffrage Association, "Twenty-five answers to antis."

53. Glenna Smith Tinnin, "Why the Pageant?" *The Woman's Journal* (15 February 1913): 50.

54. National American Woman Suffrage Association, "Twenty-five answers to antis."

55. Ibid.

56. Ibid.

57. Ibid.

58. Moynihan, *Rebel for Rights*.

59. *New Northwest*, (16 September 1880).

60. Abigail Scott Duniway, *Pathbreaking* (New York: Schocken Books, 1971).

61. *New Northwest*, (26 April 1872).

62. *Pacific Empire* (21 November 1895).

63. See also *New Northwest* (15/29 December 1871) in which Duniway recommends that women take up the "thousand light and easy occupations which are now monopolized by men who are out of their 'sphere.'"

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¡Como un Indio!: An Anthropological Literary Examination of Chican@ Indigeneity Representations

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In the United States, the distinction often drawn between the ethnic identities of “Native American” or “Indian” and “Chican@” creates an interesting paradox because most Chican@s have indigenous heritage. Efforts to prove that Chican@s are indeed Native Americans, and should thus be included under that ethnic identity tend to be misplaced, for there are many reasons why the two groups represent distinct, separate identities. A more fruitful focus is to examine the reasons behind the denial of a contemporary indigenous heritage within the Chican@ identity. That examination can proceed from Mexican national history to the Chican@ civil rights movement to the present-day perceptions of Chican@ identity. Each of these facets has had very real implications for the interactions and subsequent representations of indigeneity in Chican@ identity. One important and little used way to explore the factors of identity is through works of literature, three of which are the focus of this study—Sandra Cisneros’s *Caramelo*, Rudolfo Anaya’s *Heart of Aztlán*, and Leslie Marmon Silko’s *Almanac of the Dead*.

Some definitions of key terms, particularly Chican@ and indigeneity, are an important first step. A Chican@ can be defined as a person of Mexican ancestry born in the United States of America but emphasizing an indigenous heritage. For many Chican@s, their indigeneity is affiliated

with the Aztecs, or Mexica. This definition is still somewhat problematic because of its simplicity, but it nevertheless relays the point. In his book *Aztecas del Norte: the Chicanos of Aztlán*, Jack Forbes offers a similar definition regarding Chican@s indigeneity. In his view, Chican@s “all possess Mexican Anishinabe (Indian) descent to some degree. It is from this common Mexican (ancient Nahuatl-Aztec) background that the basis for modern Mexican and Mexican-American identity is derived” (Forbes 13). Indigeneity refers to indigenous people and can be defined as an ethnic group having historical connections to a particular geographic region. Also of importance are the ties the group had to the region before and after European colonization. That definition encompasses any ethnic identity group formed subsequent to a colonial encounter.

Research focused on the Chican@s identity primarily emphasizes indigenous heritage in the past, limiting it to the nation of México and the now non-existent tribal empire of the Aztecs. The heavy focus on the past negates any contemporary tribal identity and draws attention away from the possibility of Chican@s having Native American heritage with extant tribal nations in both México and the United States. The reasons behind this association can be traced through Mexican colonial history. In his book *México Profundo: Reclaiming a Civilization*, anthropologist Guillermo Bonfil Batalla introduces a colonial process known as “de-indianization,” which describes the ways in which the mestizo populations of México lost touch with their indigenous roots after the arrival of the Spaniards. Batalla argues that “de-indianization is a historical process through which populations that originally possessed a particular and distinctive identity, based upon their own culture, are forced to renounce that identity, with all the consequent changes in their social organization and culture” (Batalla 17). This process was not applied to all indigenous populations within the nation but had much more devastating effects upon those who were

of mixed heritage, the mestizos (those individuals of Indian and Spanish heritage). Within Mexican colonial society, these individuals occupied a separate social class, lower than that of Spaniards but higher than Indians. The class structure made it possible for mestizos to elevate their social status, making it in their best interest to deny indigenous heritage. A somewhat loftier position on the social ladder did not ensure economic betterment but instead became a matter of "social purity." In contrast to the situation in the United States, the claiming of an indigenous identity is less of an individual matter and more of a socio-economic standing. Those individuals in power have always been more westernized, which basically means adhering more to an Anglo heritage and being further removed from any indigeneity.

The socio-cultural pressures subsequently create a dilemma for mestizos in the sense that they are left to occupy a marginalized social space. They know that being an Indian automatically places them into both a lower social and economic standing, making it easier to deny indigeneity and creating a form of internalized racism. Those same individuals compose the majority of México's population but often occupy the larger poverty stricken areas of Mexican cities and rural villages. Their adherence to a European past often does not afford any economic betterment, and they are usually forced to migrate into the United States in search of better paying jobs. Subsequently, they form communities whose members in later generations identify as Chican@s—persons of Mexican ancestry born in the U.S. Therefore, a refusal to adhere to an Indian identity is carried into subsequent generations. The process of de-indianization is not about casting blame, quite the contrary. No one individual or group is to blame. Instead, the focus should be placed upon the colonial history that has primed the foundations of identity creation. Sandra Cisneros's *Caramelo* offers an excellent example of the mestizo experience, speaking

specifically to the attempts to reconcile both indigenous and Spaniard heritage, but identity conflicts become apparent in the novel.

The Chican@ Movement of the 1960s is the second important facet of Chican@ identity. Although some people have the impression that Chican@ as an ethnic group dates only from the social movement of the 1960s, it has earlier origins linked to the creation of the Mexican American border in the 1840s. Nevertheless, the movement's importance lies in the ways in which it was a stage for reclaiming Chican@ indigeneity. One of the driving factors behind the ethnic uprising was the need for Mexican Americans to remove the emphasis on European heritage and instead embrace indigenous roots. Some scholars have argued that the value placed upon indigeneity was a direct reaction to the perceived discrimination that dominant white society perpetuated against Mexican Americans. Racism was especially prominent following the Mexican American War, the annexation of Texas, and the continued influx of white Americans into areas heavily populated by Mexicans. Racism was rampant in border states and "chicanismo"—a sense of Mexican/brown nationalism and pride—was a result. Chicanismo and its push to maintain and preserve every cultural element related to Mexican nationalism helped to create an identity with the Aztec empire, a problematic link but a source of great national pride. In recent years, the dramatic effort to reclaim indigeneity, ultimately a positive step, has created problems of identity appropriation. Many Chican@s have begun to identify with Southwest tribes with whom they may not share historical roots. Instead, they are following the dominant United States viewpoints of "Pan-Indianism"—that all Native Americans are essentially the same and that a single Indian culture exists. Author Patricia Penn Hilden takes exception to this attempted cultural revelation and proclaims that Chican@s essentially are looking for an indigenous identity that does not truly exist and are instead perpetuating cultural appropriation. She contends that

“such shifts in identity assertions, however progressive in a Chicano/a world that once shunned any suggestion of “Indio” heritage, nevertheless hide the actual indigenous origins of many Chicano/as” (Hilden).

Hilden’s contention highlights the problem of indigenous appropriation but fails to recognize the possibility of Chican@ tribal heritage in the Southwest. Yet the definition of Chican@ with an ethnic identity anchored in the Southwest, while advanced and supported in some literary sources, has received little attention from anthropologists. Most of the attention to that issue has come from the growing field of ethnic studies rather than more traditional anthropological or ethnographic approaches. Moreover, anthropologists often overlook literary works as legitimate avenues to analyze identity because they often view works of literature as lacking enough sufficiency to truly reflect community ethnicity and perceptions. That view is problematic because many literary works, especially those that have autobiographical elements, have enhanced value as forms of ethnographies. Novels offer an unhindered perspective of a community’s self-definition from the viewpoint of an individual of that particular community. The views are unhindered in part because the authors are free to write of their own personal experiences in their respective ethnic communities, minus the constraints imposed by the formalities of the social sciences.

Rudolfo Anaya reflects a Chican@ reclamation of indigeneity in his novel *Heart of Aztlán*, a story chronicling a community’s struggles in a New Mexican barrio. The journey of the Chavez family in the novel represents Chican@ struggles to recover indigenous roots. In the novel, the community, including the family, faces the problems of land loss, cultural disconnection, and social disempowerment made worse by labor exploitation. Anaya’s portrayal of indigeneity, however, is often problematic in part because he perpetuates dominant societal stereotypes.

The novel is a powerful examination of the plight that Chican@s have faced regarding their indigenous heritage. The Chavez family and Chican@s generally are influenced by the colonial Mexican past and the mainstream U.S. culture with its images of Indians and demands for acculturation. The characters deemed "Indian" in the novel are underdeveloped, and fail to truly represent persons of contemporary indigenous heritage. They fall under the heading of the "Invisible Indian," with examples ranging from the trusty Indian Guide to the Indian Witch Woman dabbling in the black arts. Anaya's attempt to reconcile the identities of Chican@s and Native Americans results in stereotypical representations. His effort highlights the difficulties of clarifying native identity within Chican@ communities and illustrates ways that elements of identity can be downplayed or devalued.

Anaya's use of Aztlan as a concept relates directly to the idea of an indigenous homeland within the United States. Within indigenous societal structures, land base is at the forefront; a people cannot exist without a place to claim roots. The concept of Aztlan answered the Chican@ cry for a legitimate land base while refusing to recognize the artificial, political borders constructed by the U.S. An established base on the land and roots in history contest the dominant society's definition of Mexicans and Chican@s as illegal aliens, the idea behind deportation. When people lack a land base, they are lost and doomed to be displaced, a problem that plagues the characters in *Heart of Aztlan*. In the novel, the Chavez family has been uprooted from Guadalupe, New Mexico, and forced to search for economic support. That early displacement characterizes the Chican@ experience.

A connection to a homeland is the very essence of an indigenous identity, and Clemente, the patriarch of the Chavez family, understands that important link. In his view, leaving one's land base is equivalent to severing old, sacred ties with the Earth. "Without the land, the relationship

a man created with the earth would be lost, old customs and traditions would fall by the wayside, and they would be like wondering gypsies without a homeland where they might anchor their spirit" (3). He knows that the family's arrival in Albuquerque means a loss of land and culture. His children, Juanita, Ana, and Benjie, are eager to shed the old life, seeing it as stagnant and failing to incorporate the ways of the dominant society. His other son Jason is more hesitant, having been guided by a nameless "old Indian" who bestowed upon Jason the old traditions and customs. In contrast to his siblings, Jason remains more interested in applying what he has learned and feels that the city will not allow that to happen.

The attempt to bring the indigenous element of Chican@ identity to the forefront is challenged by consistent contradictions throughout the novel. Clemente and Jason draw indigenous and Chican@ identities together but in problematic ways. The difficulties of proclaiming an indigenous identity are increased and lack substance if authors fail to depict contemporary affiliation. For instance, the customs the old Indian taught Jason differ from the customs Clemente describes and holds dear. Clemente discusses the ways of the *llano*—translated as grassy plains—but more specifically the way in which cowboys could herd their cattle on those lands. These practices were part of the Chavez means of sustenance and were generational. In contrast, the Indian taught Jason tribal practices such as the meaning and importance of the Earth. Anaya never discloses the tribe to which the old Indian belonged. Anaya never explains the actual meanings of the customs nor how those customs apply to Jason. The youngest son appears to be the first character that functions as a gateway into indigeneity for the family.

Seeking to enhance parallels between Chican@ ancestry and that of Natives, Anaya has Clemente's wife Adela attempt to make a key revelation to her husband. She accepts the loss of their land as a fact of life

and offers the revolutionary idea that a person's home can never be fully forgotten if it is kept in spirit. To ease her husband's worries and ensure the children's remembrance, Adela gathers some earth into a coffee can with the intention of mixing it in their new garden. As Adela gathers the earth, the novel changes its pace and introduces an unknown, supposedly ancient community who did the same thing long ago.

[C]enturies before, the brown hands of an Indian woman had scooped the earth of the heartland into a clay vessel...and the people had carried that sacred urn as they wandered across the new land to complete their destiny. The earth was the new covenant between the people and their gods (7).

The scene is significant because it is the only instance in which Anaya portrays Adela as something other than a burden. For a brief moment she steps out of the role of cumbersome female and takes on a sense of indigeneity, but the moment passes, and the event adds to the contradictions of the novel.

Problematically, Anaya never states who that Indian woman and her people are meant to be, but leaves readers to assume that they are the founders of Aztlan. The result is a pan-indigenous view that presents all Indians as the same. In addition, Adela seems to be a narrow, undefined character. Instead of having the same passion as her husband about their situation, she instead accepts it with an air of complacency. When they arrive in the barrio, Clemente is forced to accept employment at the railroad yard that is plagued by a foreman who fails to pay fair wages. Instead of lending support, Adela continually challenges Clemente's masculinity as they face the challenges of child rearing. Her actions, combined with her almost one-dimensional character, present an element of betrayal and are consistent with the view of the dominant society that indigenous women are essentially treacherous, betraying both family and community. Anaya

remains consistent with that machismo stand by suggesting that Adela's assertion of a leadership role is indicative of the decline not only of the family but also of the community as a whole, an issue that recurs later in the book as well.

One poignant but difficult to interpret scene with implications for indigenous identity focuses on Clemente's work in the railroad yards. The working conditions are dangerous, and the men are expected to work only two at a time when connecting rail cars, conditions indicative of the oppression they face. The general lack of concern and low wages outlines the plight of the laborer in the novel and symbolizes the societal strife experienced by the Chican@ people. Because of the poor conditions, a worker loses his life, and his blood sacrifice is accepted by a Sun Deer, Anaya's allusion to an indigenous god of sorts. The worker's death awakens this "sleeping" god and begins the "fifth cycle," or a new way of the world. The blood sacrifice leads Clemente and the rest of the workers to call for revolution and represents Anaya's method of connecting the ancient, traditional ways with modern struggles. He uses the idea that when assistance was necessary for tribal survival, a blood sacrifice was made to the gods. The sacrifice ensured that the gods would be satisfied. In this instance, the blood loss was both a gift and a sign of urgency to address the plight of the people.

This scene relies on graphic, bloody violence as the worker's head is ripped off by a giant hook, an apparently necessary piece of machinery used to pull rail cars together. Anaya goes into detail about the way in which the man dies, describing his death throes and the blood-soaked earth. Following the incident, an alarm alerts the barrio about the death of a worker. The alarm relays the consistent threat posed to the laborers and underscores the necessity to work dangerous jobs because of the group's economic disadvantages. Yet, Anaya's choice of graphic violence

relies on the use of a barbaric blood sacrifice in a stereotypical indigenous representation.

[T]here had been times of darkness, four times the earth and its life had been consumed in the void, and each time the blood of sacrifice had raised the light. Now the fifth sun, a blinding white deer raced across the sky; a new legend would have to be told... before the deer gave its power to the people (25).

The failure to name a particular tribe continues the notion of Pan-Indian nationhood, with all tribes holding the same spiritual beliefs. Nevertheless, it ties the people of this barrio into an indigenous past by referencing the cycles of the earth and ages, as well as the god-like deer lending its power.

Clemente denounces the role of proactive leader and chooses instead to remain complacent as he encounters these social problems. Just as Clemente realizes the need for drastic change to the societal infrastructure, he begins to lose control of his life. The boss, sensing Clemente's involvement with the worker uprising, swiftly fires him. After losing his job, he doubts his masculinity as his family relies on his daughters' wages for support. Clemente becomes depressed and begins drinking heavily, conditions from which his family is nearly unable to draw him out. The only sense of healing comes from an old blind man named Crispín, who plays a magic guitar and sings of Aztlán. Once Clemente learns of this ancient homeland, a source of inspiration and strength for his ancestors, he yearns to find its location. Crispín takes him to an old Indian woman who is called a *bruja*—translated as witch—and dabbles in witchcraft and the black arts. She guides them on a sort of vision quest in which Clemente learns that Aztlán does not exist physically but is rather a spiritual entity.

The figure of the *bruja* raises additional problems because of its representation of indigenous healers and women. Anaya seemingly based

the character on popular cultural stereotypes of indigenous spiritual systems with roots in the black arts and with some sort of connection to a mythical demonic figure. The idea relates directly to a colonial mind frame, drawing from Catholicism rather than indigenous beliefs, and raises an unfair—and ultimately generic—representation of Native beliefs. In addition, the very fact that the *bruja* is able to allow Clemente to take a “vision quest” further perpetuates a generic, stereotypical view of Indians. In reality, that particular form of vision quest is limited to United States tribes located in the Great Plains. Simultaneously, Anaya does not lend any actual strength to this old Indian woman but instead portrays her as a practitioner of witchcraft. He falls in line with the dominant view that indigenous women are capable of trickery and black magic but hold no actual power or cultural significance. She does not directly lead Clemente on his quest; rather it is the magic that she exudes and her reliance upon the Devil.

Because Aztlan is a spiritual manifestation, as Clemente learns on his vision quest, if the people of the barrio can simply draw upon their heritage and its power, they can better their situations. Using this knowledge, Clemente pulls the workers together and stages an uprising. He invigorates his fellow Chican@s by reminding them of their indigenous roots and long established homeland of Aztlan. With their reclaimed identity, they gain a sense of legitimacy and realize how to end social oppression. Anaya implies that the reclamation is possible because of the help of an ancient, indigenous god, Sun Deer, who facilitates the recognition and reclamation of an indigenous past for his people.

Did he sleep in the lands south if Aztlan, unaware of the sufferings of his people?...The golden deer stood still. He pawed the fresh earth of eternity, sniffed the fathomless space of his journey, then he leaped northward into a trail of blazing glory that would take him to his people (201).

The novel has no clean, happily-ever-after end despite the gained knowledge. Instead the book ends with the people coming to Clemente's house where they prepare to begin a march to the railroad yards. Perhaps a clean ending to the novel is not appropriate given the nature of any discussion of Chican@-Indian identity.

Indigeneity is a difficult topic to process, especially considering the historical connotations throughout México, as well as the paradoxes within Chican@ identity. For Chican@s there is a need to become truly comfortable and confident with a mestizo identity that stems from cultural interactions within the homeland, an idea that is the direct concept for Sandra Cisneros and her novel, *Caramelo*.

In *Caramelo*, Cisneros follows the generations of a Mexican family and their lives within México and the United States, while commenting on the paradoxes that exist in the Chican@ identity. The novel presents the possibility of becoming secure with a *mestiza* identity—finding a common ground between Spanish and Indian heritage. Yet, an indigenous identity lacks a positive spin and instead continues to be a negative aspect of an individual's character. As the novel progresses, anti-Indian sentiment flourishes and is neither countered nor thoroughly explained. Instead, the Indian aspect is left generally untouched resulting in the ever present "invisible Indian," an undercurrent and theme for the current project. In the end, the novel fails to reconcile the identities stemming from the Spanish and indigenous heritages and perpetuates a negative view of Indians. Moreover, through her attempts at identity reconciliation, Cisneros creates a number of identity paradoxes that she leaves unexplained.

Caramelo is truly a novel of transnational identity, representing the experience of bi-cultural individuals. The novel focuses on the experiences of Celaya, the adolescent main character, as she discovers that an individual's identity is shaped by a family's experiences. She

tells of life on both sides of the border between México and the United States, relaying the difficulties faced by those with bi-cultural identities. To incorporate the confusion and discovery of such experiences, Cisneros shapes the novel into a coming of age story. She sentimentally conveys the reality of acculturating to a new American society and integrating traditional Mexican ways. In his article, "The Politics of Translation in Sandra Cisneros' *Caramelo*," Bill Johnson González argues that

what makes Cisneros' work unlike so many other Chicano texts, which tend to depict that community's struggle to preserve its cultural difference from the dominant culture of the United States, is precisely the novel's exploration of the tensions and critical differences within the Mexican/Chicano community (4).

The novel opens with an example of that identity conflict; it begins with a memory of a family trip to Mexico City to visit Celaya's grandparents, the Awful Grandmother and Little Grandfather Reyes. The Reyes family is Creole, born in México of Spanish heritage and very proud of this fact. In contrast to the idea of European purity are the washerwoman Amparo and her daughter Candelaria. They are dark skinned, obviously Indian, and representative of the social stratification in México that defines who occupies the lower rungs of the social ladder. Throughout the novel, Celaya and her family never give a second thought to the place of Indians in society, and the washerwoman's plight is one example. Initially, Celaya's youth makes her ignorant of the sentiments of Creoles, and she often plays with Candelaria, who Celaya feels is the epitome of beauty, with skin the color of caramelo. Their differing places in society are starkly evident when Cousin Antonieta Araceli tells Celaya, "How can you let that Indian play with you? If she comes near me, I'm leaving" (36). Celaya's mother Zoila repeats the sentiment by forbidding Celaya ever to have contact with Candelaria again, for the implied reason of lice and other sanitary

considerations. Those comments are indicative of the general anti-Indian sentiment and the Reyes sense of superiority.

Although the presence of Candelaria may seem trivial, it holds deeper social implications regarding the view and treatment of indigenous people. On the surface, the Reyes family simply seems to be prejudiced and regards Candelaria as a lowly individual. The prejudice, however, goes much deeper than surface appearance. Although not revealed until later in the novel, Candelaria is Celaya's half sister. Her father, Inocencio, had an affair with the washerwoman Amparo making Candelaria an illegitimate child. The situation involves double-sided discrimination. Not only was Inocencio exempt from claiming responsibility for Candelaria, but he was simultaneously permitted to use Amparo as a sexual object. Adding further insult to her humanity, let alone her femininity, she was expected to return to work without any questions. Amparo lacked the rights to confront Inocencio, never mind expect any parenting assistance. Of course, the enormity of the relations between these two characters goes largely unnoticed because of the one-dimensionality of Amparo. She is indicative of the invisible Indian, undeserving of any further development. Furthermore, the washer woman and her daughter fail to make further appearances in the novel once the truth is uncovered. In fact, a troubling ambiguity exists in the characters of Amparo and Candelaria. Cisneros leaves the reader dangling in the sense that she fails adequately to explain the societal implications behind the subjugation of these characters. That shortcoming is especially problematic in the face of the title of the novel, *Caramelo*. It stems from Celaya's fascination with the color of Candelaria's skin, "Smooth as peanut butter, deep as burnt milk candy [caramelo]" (34). Within the novel there is a lasting impression of her complexion, but a lack of interest in any other aspects of the girl and her life. The anti-Indian attitude is rampant throughout this example, continuing to include Celaya

and her mother.

An incongruity underlies Celaya being forbidden to play with Candelaria because the latter is an Indian, and it relates directly to the person who forbids the contact. Zoila is a one-dimensional character with little development other than a bitter, menacing personality. One in-depth identity element sheds an ironic light on the Candelaria situation—Zoila is an Indian herself, a fact revealed late in the novel and only in passing. The Awful Grandmother worries that Celaya does not have a womanly figure, and Inocencio quips that it is due to the Reynas, Zoila's family. "The Reynas are all built like a mountain range. It's their Indian blood. Pure Yaqui" (241). Zoila reacts with dissension, but Cisneros does not pause over this fact for long, choosing to continue the story and leave the larger implications of Zoila's identity unexamined. The anti-Indian, internalized racism that Zoila expresses becomes an aside, but it is glaringly pertinent to the overall message of the novel. Zoila disliked Candelaria, prior to learning of her husband's infidelity, simply because she was an Indian. Furthermore, Zoila is unhappy with her own indigenous identity, but these aspects of her character remain unexplained, placing her into the category of invisible Indian as well.

Directly related to the invisible Indian, as represented by Zoila and Candelaria, is the self-hating Indian. This idea depends upon internalized racism, and the novel pursues that theme. The entire second part of *Caramelo* tells the story of the Awful Grandmother, whose name is Soledad; the story allows Celaya truly to understand her relationship with her grandmother. Soledad's story is told post-mortem and makes clear that the grandmother was a bitter woman who had a difficult life. Yet, her difficulties can be attributed to an indigenous identity and a self-hatred of her heritage. The reader sees the hatred that Soledad felt towards her identity arising from being abandoned by her father. Because of her mixed blood status—

indigenous and Spaniard—the father no longer wanted to raise Soledad after the death of the Indian mother. Sent out into the world, she became a servant, befitting her Indian status, and coincidentally, worked for another part of the Reyes family. During that time, two additional occurrences further cement her future identity, ensuring that Soledad would suffer from internalized racism.

Regina Reyes was the perfect example of a woman suffering from internalized racism and served as a model for Soledad who later exemplified the same traits. Regina, great grandmother of Inocencio, came from indigenous roots, but had managed to marry higher up in class status. She married a Spaniard, automatically elevating her social status, and leading her to ignore her Indian background and despise those who had the same beginnings. She was the embodiment of self-hatred, but nevertheless took pity upon Soledad because “Soledad was a Reyes too, although of the backward Indian variety that reminded Regina too much of her own humble roots, a peasant Reyes from the country” (113). Nevertheless, Regina refused to claim her indigeneity and knew that Soledad was going to fulfill the expectations of her lowly status, that of servant girl.

The fate that befell Amparo reflects that of Soledad, further displaying the anti-Indian attitude expressed by the Reyes family and others in México. Soledad met and fell in love with her cousin, Narciso, and fully believed the feeling was mutual, especially when he began making nightly visits into her kitchen quarters. “Soledad could not have known Narciso was not singling her out among all women, but simply enjoying her as his birthright. Was she not ‘*la muchacha*’ after all, and was it not part of her job to serve the young man of the house?” (156). That event exemplifies the thought process of los Creoles and set the stage for what happened between Inocencio and Amparo, the washerwoman. In the end, Soledad became pregnant and marries Narciso, whose father forced him to uphold

the obligation. Thus, Soledad improves her social standing by marrying a Spaniard and is able to ignore her Indian heritage. Ultimately, the marriages, as both Regina and Soledad experience them, represent a form of internalized racism. Both women, awarded the opportunity to deny their indigenous heritage, embraced the ability to forget their histories.

The ultimate example of identity paradox is seen in Celaya whose coming of age story tells her family's history. The purpose of Celaya's exploration of the experiences of mestizas, especially her grandmother Soledad's, is to express a hope of coming to terms with her own identity. Although the story seeks a middle ground between the Spaniard and Indian existence, the broader goal is not accomplished. Instead, a narrative centering on the importance of her Spaniard relatives flourishes, and the Indians are pushed to the back. In fact, the mention of any Indian ancestry has negative implications and reactions from other characters. The novel allows only a limited focus on any Indian aspect of los Reyes, while emphasizing Spaniard relatives and blood.

[T]heir blood was Spanish, something to remember when extolling their racial superiority over their mixed-blood neighbors. And even if these ne'er-do-well Reyes had not inherited anything but an overdose of pride, the family Reyes was still *española* (163).

Celaya reflects that attitude by speaking much about her Spanish history, but leaving out the mestiza element. She has reached no reconciliation.

A belief exists that once an individual crosses from México to the United States, assimilation into American culture will inevitably occur, resulting in the loss of indigenous heritage. This idea has been at the forefront of Chican@ identity, placing indigeneity in the past and embracing a hybrid of Mexican and American cultures. Cisneros's *Caramelo* and Anaya's *Heart of Aztlán* are novels concerned with exploring that concept and embracing the notion of identity determined by the border. Leslie Marmon

Silko, in her novel *Almanac of the Dead*, chooses to disavow the power of the border through characters that do not fit the identity mold. Many of her Indian characters keep their indigenous identities intact despite living in *el otro lado* (the other side), as they often refer to the United States; they exist within American society, successfully avoiding assimilation. Silko discusses the Mexican-American border as permeable, stripping it of its impenetrable existence and lessening its divisiveness. Instead, she emphasizes the shared histories of colonialism within Indian communities of both México and the United States, creating a pan-indigenous network. This makes the adherence to a particular identity, whether Chicana@ or Indian, irrelevant and melds the two identities into one.

Silko's *Almanac of the Dead* is truly a vast novel, attempting to encompass stories and experiences from the perspectives of the oppressed and oppressors. Essentially, it is a novel of reclamation for tribal persons worldwide but with particular emphasis given to the indigenous people of México and the Americas. The story concerns events that presage the return to ancestral lands by all persons residing on the American continents. Capitalism is beginning to crumble because resources are quickly being depleted and violence is beginning to turn on the perpetrators. The violence can be seen within México with escalating indigenous uprisings caused by the wealthy who have used resources indiscriminately. Silko has created an apocalyptic world filled with indigenous uprisings. She attempts to uproot persons of European heritage so the land may once again belong to the Indians. In his article, "The Dissolution of the Mexican-American Border and Redefinition of Chicano/a Mexican Identity in Leslie Marmon Silko's *Almanac of the Dead*," David Harding contends that Silko's work "explores the implications of apocalyptic consequences of a reawakening of indigenous identity among Mexicans living on both sides of the Mexican-US border" (153). The reformation of the Indian identity is a vital

aspect of *Almanac of the Dead*, but Silko also presents a re-rendering of Chicanismo. The novel makes the argument that because people on both sides of the border share history, the border no longer has significance, nor does the continued identity distinction between Mexican and Indian, or even Chican@ and Indian.

To make connections between Chican@s and Indians, the border must be penetrable, and tribal connections that existed prior to European arrival must have importance. This is the premise throughout *Almanac of the Dead*: with the border diminished, Silko places importance on indigenous connection and contemporary identity. Unlike Rudolfo Anaya's romanticizing the Indian by placing indigeneity in the past, Silko's indigenous characters are representative of contemporary indigeneity relating to Mexicans living on the U.S. side of the border. Silko argues that "the white man had always been trying to 'control' the border when no such thing existed to control except in the white man's mind" (592). The novel asserts that cultural and tribal differences must be set aside and the history of violence and colonialism is a history that can be shared. The imposition of the border only works to create divisiveness, but if people ignore the border, then connections can be re-established between indigenous people.

The fragmentation of the novel, seen through its non-linear plot line, indicates the climactic chaos occurring within the Americas. Silko links the feelings of her characters to identity issues and conflicts, such as those between Europeans and Native Americans in the U.S. and México. Many of the direct interactions between whites and non-whites hold a tension that is indicative of colonial history. Nevertheless, the conflict between the indigenous history of Chican@s and that of México and the United States has been a common theme in history and literature. That theme rests on the ideas that Chican@s not only lost their Indian identity when they

crossed the border, but also that their identity began to wane before the actual crossing. Mexicans, and those of Mexican descent, are consistently viewed as foreigners. One native character asserts that

the people he had been used to calling “Mexicans” were really remnants of different kinds of Indians. But what had remained of what was Indian was in appearance only...They had lost contact with their tribes and their ancestors’ worlds (88).

These conflicts appear to be the driving force behind Silko’s decision to alleviate the importance of the Mexican-American border and present Indians on both sides as similar. She places importance on the shared history of colonial impositions and violence that Native Americans have faced throughout the continents. The willingness of Zeta and other Indians to traverse the border to bring about the revolution undermines the political reality of the border. Many Indians, realizing the importance of forming a union between Mexican and U.S. tribes, realize the border has no real power over their lives. Calabazas, a Yaqui associate, asserts:

We don’t believe in boundaries. Borders....We are here thousands of years before the first whites. We are here before maps or quit claims....We have always moved freely. North-south. East-west. We pay no attention to what isn’t real. Imaginary lines (216).

A new foundation for Chican@ identity results when indigenous connections in the novel transcend the political border. The characters challenge the contention that indigeneity must be set aside after leaving one’s homeland, in this case México. The characters who best exemplify the reformed identity are Yoeme, Lecha, and Zeta. Rather than sever ties with their tribal affiliation, those three women work to keep their indigenous identities intact. They actively work towards producing a revolution in which Native Americans on both continents will retake lost land.

Just as Silko removes artificial boundaries that create separation, so she

removes the insistence upon “pure” blood. The idea of purity in blood may be one barrier preventing a Chican@ identity from being considered an indigenous identity. Therefore, alleviating blood quantum from the rubric for “Indianness” compliments the novel’s argument. Removing the focus on blood and purity also works to underscore the trivial nature behind continuing to draw distinctions between Chican@ and Indian identities; they are one and the same. In the novel, the twin Yaqui sisters, Zeta and Lecha, are embodiments of the Chican@ experience with clashing histories embedded in their blood. They are products of colonialism at the nadir of which an Indian meets a European not out of love but domination, but each woman comfortably claims Indian identity. Originally, Zeta and Lecha were taught to deny their Indian identity and, instead, to claim Mexican heritage because it was grounded in European not indigenous ancestry. That view held until their grandmother Yoeme—the indigenous name for the Yaqui—enters into their lives. She makes it clear that they are of indigenous heritage, and it has simply been their mestizo, “half no-brain white, half worst kind of Indian” (121) relatives who had diminished their ancestry. In her granddaughters Yoeme recognizes the potential for harnessing abilities needed to bring about the revolution that will end European domination throughout the Americas. Yoeme little cares that her granddaughters do not possess pure Indian blood but are half-breeds. This is an example of how the novel removes the emphasis on blood quantum and focuses instead on the shared histories of colonial violence. Unknown to the girls, their family has quite the history of being both the perpetrators and simultaneous receptors of that violence.

The family history is indicative of the tensions existing between Native Americans and Europeans and the problems arising from the attempt to maintain an indigenous identity. Yoeme was married to a Spaniard named Guzman as part of an agreement to maintain peace between the Spaniards

and her tribe. The Spaniards broke the treaty, as many other treaties were broken, and massacred Yoeme's clan. She fled, knowing that remaining with her family would result in her death as well. Yoeme makes it well known that her half-breed children, one of whom is Zeta and Lecha's own mother, lacked the resolve to be true Indians. They were too willing to forego their indigenous heritage for that of a white identity. Simply having "Indian blood" is not enough; a particular ideology and potential needs to exist as well. Yoeme's own life experience lends her the resolution needed to become a driving force in the revolution. Survival was essential, because she possesses a book, an almanac, containing prophecies about the future of the world. She knows that the time of land reclamation is near and that the notebook must be passed on so that its different prophecies may be interpreted.

Zeta and Lecha are twins and opposites; two halves of a whole. Neither sister fits the mold of the stereotypical, dominant societal depiction of the spiritual Indian, working to bring peace between whites and Native Americans. Lecha represents knowledge of colonialism and its historical significance. She brings to light the atrocities and impacts of colonialism, acting as a gateway between past and future. As Silko explains, "The power Lecha had seemed to be as an intermediary, the way the snakes were messengers for the spirit beings in the other worlds below" (138). For people to participate in the Indigenous revolution, they must be aware of the past and how it will influence the future. Lecha's insight seems to sense only death for the whites and their brethren. She traverses the talk-show circuit, touting herself as a psychic with the ability to locate those that are lost, but most troubling to Lecha is that the lost always turn up dead. Many of the people who approach Lecha are of European ancestry seeking lost children. The fact that the children always turn up dead, murdered in terrible ways, is indicative of the lack of future for whites. The

terrible deaths of the children seem to parallel the ways in which whites perpetrated colonial violence against indigenous people. To ensure that Indian populations ultimately declined, many U.S. and Mexican soldiers murdered Indian children. Lecha's encrypted messages to society at large make it obvious that the tide of colonialism is shifting, with violence and death being directed against the oppressors. Many Indian tribes take that shift to mean the final end to European domination is on the way, an idea that fits Lecha's predictions and contrasts with the notions of the Spirit Guide Indian who foresees only good things for whites. In Silko's work, both the psychic insights and the almanac interpretations speak of the end of colonialism and the uprisings of indigenous people. The language and words behind history and future change is Lecha's primary concern. Inciting change and ending such colonial impositions as a divisive border are possible when people become aware of history.

Freely crossing the Mexican-American border shows absolute disregard for European impositions and brings Indians one step closer to revolution. The character of Zeta represents the actual physical aspects of war and revolution. The impact of historical impositions is visible through her actions. While Lecha is concerned with spreading the word of change, Zeta enacts it by smuggling weapons from México into the United States. She holds no qualms about the revolution taking on a violent quality. Humorously, Zeta helps finance the Indian revolution by selling cultural items to white people who are interested in garnering authentic Indian "trinkets." Unknowingly, the whites who buy her products are funding their own demise. A further irony lies in the fact that the weaponry will be used to uproot people of European ancestry and send them fleeing back to their respective homelands. The tribal community is chagrined over Zeta's behavior, proclaiming it to go against the "Indian Way." While conducting

her arms smuggling across the Mexican-American border, Zeta faces people who claim it is not right to go against the laws of white men, but she challenges them:

What wasn't the "Indian Way"? The people had been free to go traveling north and south for a thousand years, traveling as they pleased, then suddenly white priests had announced smuggling as a mortal sin because smuggling was stealing from the government (133).

Zeta never accepted the adage of the Indian Way as meaning weakly complacent and willing to continue to allow European domination to continue. The mere idea that assisting her people is somehow un-Indian makes Zeta scoff. Revolution remains unobtainable if people are unwilling to examine the colonial history of America and subsequently act to change the future.

In the end, each woman—Yoeme, Lecha, and Zeta—possesses an element necessary for survival and revolution. Each sister is an embodiment of an ability needed to overcome European domination and put an end to colonialism. Yoeme exemplifies indigenous survival by refusing to recognize any agreement between Europeans and Native Americans. She represents the importance of community ties. Lecha possesses the ability to bring past and future to the forefront, being wholly representative of the mind frame needed to create a revolution. She brings to society the idea that the colonial legacy of identity division can be overcome by recognizing the common history and indigenous identity. She exemplifies the spiritual bonds between indigenous communities. Zeta possesses the ability to negate any physical power the U.S.-México border has by unboundedly crossing it at a whim. There are no tangible differences between Indians on either side, but rather the idea that the border imposes differing identities. In this way she makes the indigenous communal connections a corporeal manifestation.

Conclusion

This project held challenges on many fronts. The essential task was choosing three works that really embodied the different problematic aspects of Chican@ identity and indigeneity without seeming simply to attack Chicanismo. Rather, the task was to explore the historical and contemporary representations of indigeneity and attempt to find the root causes behind the identity confusion embedded in the Chican@ identity paradigm. Three issues stand out as contributing to that confusion: Mexican colonial history, the reverence of Aztec culture created by the Chican@ Movement, and the present-day Pan-Indian identity appropriation.

Rudolfo Anaya's *Heart of Aztlán* simultaneously serves two functions and becomes representative of two aspects of indigeneity identity confusion—the influence of the Chican@ Movement and an adherence to Pan-Indianism. The author seeks to portray the pride of Mexican indigeneity through his character's adherence to the Chican@ Movement and the social uprisings of the barrio. Yet, Anaya also has his characters participating in Pan-Indianism through Clemente's vision quest and Jason's Indian Spirit Guide. Each of these characters yearns to learn of his Aztec past and reclaim his masculinity in the face of societal oppression. Women have minor roles within this novel and seem to act as hindrances to the reclamation of indigeneity. That attitude highlights a major problem of the early Chican@ Movimiento and its tendency to discount or exclude women. Anaya presents a struggle to lose the European, foreign aspect of identity, replacing it instead with an ancient presence. In the end, he perpetuates a misogynistic, romanticized version of Indians.

In Sandra Cisneros's *Caramelo*, the feminine is in the forefront and explores an effort to reclaim a mestiza identity. This novel is representative of the ways in which Mexican colonial history has impacted the view of Indians mainly through class matters and social standing. Despite the

fact that this history was restricted to a particular nation, it nevertheless had an impact on the formation of Chican@ identity. Cisneros offers a personalized account of these impacts. Her particular account proves to be interesting because it focuses on a particular character—Celaya—tracing her family's Indian past and attempting to overcome the negativity and discrimination perpetuated by the Mexican mestizo population against the indigenous populations. When the indigenous element is present in the novel, however, it is represented by negative stereotypes of Indians. Cisneros places much more emphasis on a European past, while excising the contemporary and ancestral Indian. The primary focus of her novel involves the reconstruction of roots in an attempt to create and maintain pride in an indigenous heritage in the face of acculturated discrimination, but she fails to do so because of her continued focus upon Spanish ancestry and an inability to discuss Indians in any meaningful way.

Silko's *Almanac of the Dead* is drastically different from the other two novels under discussion. Interestingly, the difference lies in her ability to accomplish the goals of both Cisneros and Anaya. The reason for her success is difficult to pinpoint, but it may lie in the fact that Silko identifies as indigenous with Mexican heritage rather than the other way around. Thus, she is able to portray the indigenous heritage of Chican@s while ending the divisive designations of "Chican@" and "Indian." She accomplishes that end by portraying present day Chican@s, who are still very much invested in their Mexican indigenous heritage, with a tribal affiliation that is not the Aztec nation. Instead, their tribe is a living nation, the Yaqui, located closer to the Mexican-American border. She puts an end to the constant reliance upon a Pan-Indian identification, whether by identifying with the Aztecs or by appropriating Southwestern native tribal cultures. A second reason behind Silko's achievement may be attributable to the main theme of her novel—indigenous unity across all American nations. Therefore,

she draws no distinctions between Chican@s, Mestizos, or full-blooded Mexican Indians, but rather develops the idea that each of these groups has an indigenous heritage that should be the unifying factor.

In the end, perhaps less attention needs to be focused on finding actual solutions to the Chican@ indigeneity complex and more effort devoted to outlining the historical and contemporary particulars for the identity confusion. It is important to understand the historically negative sentiments towards indigeneity in Mexican culture and the way that sentiment crops up in contemporary Chican@ culture. The building of pride in an indigenous heritage, although problematic, nevertheless is a hopeful sign for an eventual reclamation and identification with contemporary tribes. It is not necessary to remove or completely discount the contributions that adherence to the Aztec tribal nation has afforded Chican@s, but perhaps it is important that as a people we begin to shed that dependence.

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“Autistic-like” Personality Traits in Neurotypical Adults: Examining Possible Differences in the Ease, Speed and Hierarchy of Social Inference

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Abstract

This study tested the hypothesis that traits associated with high-functioning autism and Asperger Syndrome exist in normally-functioning adults and that people with pronounced traits of this kind show a systematic deficit in the ease, speed and hierarchy of social inference. We also explored whether these traits related to other known measures of personality. A sample of fifty-nine undergraduate and graduate students on the University of Oregon campus participated by completing five social inference tasks, the Autism Spectrum Quotients (AQ) and the Big-Five Mini-Markers. Comparisons of these measures failed to support the proposed hypothesis, but the results raise questions about the validity of the AQ to be much more than another measurement of known personality types. The results also suggest an organization of multiple social inferences, though robust, that may have some susceptibility to variation due in part to individual differences. Lastly, this exploratory study provides suggestions for further research.

Introduction

Hardly a moment passes in our daily lives when we are not attempting to figure out what is on the minds of others by interpreting their behavior. For many, the act of inferring the mental states comes naturally, but for those who display more autistic-like personality traits, it may be a far more difficult task. People who successfully “read” the minds of those around them without effort might not realize how important these interpretations can be. In fact, the world would be a dangerous and lonely place without this ability; our capacity to infer mental states allows us to connect with the minds of others and to understand the subtle gestures that provide potentially vital information about dangers in our immediate environment. For example, is the meaning of a stranger’s hands waving at a busy street corner a friendly gesture or a warning of approaching doom as an out-of-control vehicle careens towards us? Most people are quickly able to find the correct interpretation, perhaps by looking carefully at the person’s facial expression or by considering contextual information. On the other hand, some people are puzzled by that type of behavior and even with much information cannot find the puzzle’s solution. People at the latter extreme are those with autism, a pervasive developmental disorder that, among other deficiencies, robs individuals of the ability to fully appreciate the working and meaning of mental states.

The ability to interpret behavior by reference to mental states is often referred to as Theory of Mind (ToM), and includes the network of folk concepts that allows people to identify and reason about emotions, goals, intentions, and other mental states and relate them to observed behavior (Malle & Holbrook, in press). The ability to make these inferences is crucial to the ability to function in a social world. Living in social communities also requires making inferences about personality traits and social roles as well as forming evaluations and moral judgments (Malle, 2007); those

inferences allow us to understand our world and our perceived place in it.

Autistic individuals are usually studied for their "mindblindness" (Baron-Cohen, 1995), or the deficiencies in inferring mental states in others and themselves. The present project expands on this topic of research in two directions. First, it examines nonclinical populations who may vary in their expression of "autistic-like" personality traits (e.g., the frequency of related traits they possess). Second, this study measures a broad range of inferences (about mind, gender, personality, and morality) and investigates whether performance on these measures varies with differing degrees of autistic-like personality traits displayed in neurotypical adults.

The Autism Spectrum and ToM

Children and adults who have been diagnosed with high-functioning autism (HFA) or Asperger Syndrome (AS) lack, to some degree, the ability to infer mental states in others (Austin, 2005). Nevertheless, some children who have been diagnosed with autism still manage to be successful at the false-belief task, a basic tool used to measure ToM (Tager-Flusberg, 2007). Similarly, family members of individuals diagnosed with Autism also demonstrate a deficit in ToM compared to members of families without a history of autism (Baron-Cohen & Hammer, 1997). The latter families, however, perform quite well on an embedded figures task, a measurement of one's ability to attend to detail.

Despite the fact that HFA and AS have historically been diagnosed categorically, the documented but seemingly inconsistent observations have led some researchers to question whether autism represents a spectrum or continuum of personality features, from mild to extreme, that are already present in the general population (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001a). Indeed, a growing body of research suggests that a "broader phenotype" of autism or "autistic-like" personality

traits exists in the nonclinical population (Baron-Cohen et al., 2001a). These traits include deficits in attention switching, imagination, social skills, communication, and increased ability in attention to detail, also characterized as enhanced focus of attention. In other words, we may all be a little autistic, but the degree to which these proposed “autistic-like” personality features are present in nonclinical populations and their relationship to deficits in ToM remain in question. Still, many researchers believe that deficits in language and reciprocal social communication (key elements of an HFA or AS diagnosis), are simply the extremes on a continuum of the personality features that may result in a weak or non-existent theory of mind (Austin, 2005; Baron-Cohen et al., 2001a; Mason, Williams, Kana, Minshew, & Just, 2008; Tager-Flusberg, 2007; Woodbury-Smith, Robinson, Wheelwright, & Baron-Cohen, 2005).

To measure the presence of these traits in the general population, Baron-Cohen et al. (2001a), presented the Autism Spectrum Quotient (AQ). The AQ is a self administered questionnaire designed to measure “autistic-like” personality features in individuals with normal intelligence. In the initial development of the AQ, Baron-Cohen and colleagues tested individuals diagnosed with HFA and AS against nonclinical populations made up of students, math Olympians, and a random control group.

Clear differences in the frequency of “autistic-like” personality features (from here on labeled A-traits), as measured by the AQ, were evident in this British population. The group of HFA and AS individuals scored significantly higher ($M = 35.8$, $SD = 6.5$) than all nonclinical populations tested. Still, the nonclinical groups showed systematic differences in their scores. Other research has found similar correlations between systematic and convergent thinking in mathematicians and individuals with HFA and AS (Nettle, 2005). Therefore, it may be no surprise that math Olympians ($M = 24.5$, $SD = 5.7$) scored closest to the HFA/AS group while the

student group ($M = 17.6$, $SD = 6.4$) and random control ($M = 16.4$, $SD = 6.5$) scored significantly lower. Further, within the student group was a continuum of scores. Students whose majors were in the physical sciences (mathematics, computer science, physics) scored higher than those in the humanities, and the latter scored slightly higher than those with majors in the social sciences. In a similar study, Focquaert, Steven, Wolford, Colden, and Gazzaniga (2007) compared Dutch humanities and science students using the Empathy Quotient (EQ) and the Systemizing Quotients (SQ). Both quotients measure traits associated with the autism spectrum, such that people diagnosed with autism score lower on the EQ and higher on the SQ (Baron-Cohen et al., 2003; Baron-Cohen & Wheelwright, 2004). Focquaert and colleagues found that humanities students scored higher on the EQ and lower on the SQ than did science students. Results like these seem to indicate that A-traits can be found distributed among the general population, in a systematic fashion, such that those who are more inclined to use abstract ideas and multi-answer solutions gravitate to areas of study that complement their respective systems of problem solving.

Clearly, if A-traits are related to deficits in ToM and the AQ is measuring A-traits in the general population, we should expect to find a relationship between varying deficits in ToM that correlates with variations in the frequency of AQ scores. For example, we might postulate that if mathematicians do, indeed, display more A-traits, their ability to assume the mindset of others may be more difficult or may manifest itself differently than it would in participants from the social sciences and other areas outside of the sciences.

To explore a similar question, Kunihiro and colleagues (2006) used Japanese participants and compared their AQ scores with their scores on the revised version of the "Reading the Mind in the Eyes Test" (RMET) to explore whether A-traits related to deficits in ToM. The revised

version of the RMET is an “advanced theory of mind test,” that evaluates the ability of participants to interpret the mindset of others by viewing pictures of the eye region of actors and actresses and matching the visual expression to one of four adjectives placed around the picture (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001b, p. 241). Despite the RMET’s capacity for distinguishing HFA and AS participants from nonclinical participants (Baron-Cohen et al., 2001b), the researchers were unable to correlate degrees of A-traits (e.g., AQ scores) and differences in ToM. Kunihiro and colleagues, however, noted that the RMET may not have been sensitive enough to find significant differences in ToM in this Japanese population. Also unclear is whether cultural tendencies may have affected the results. Therefore, the issue is far from being resolved and requires further examination with multiple cultural groups and with more sensitive measures.

Another issue that remains unclear is whether deficits in ToM are related to deficits in higher-order-rule use and executive functioning rather than a domain-specific impairment (Zelazo, Jacques, Burack, & Frye, 2002). One way to approach this issue is to assess people who vary in A-traits (e.g., science majors and social science majors) across a wider range of social inferences. That wider range assessment would go beyond merely mental state inferences to include inferences of social categories, personality, and moral values. Previous work found little difference between neurotypical children and those diagnosed as autistic and their abilities to make moral judgments (Grant, Boucher, Riggs, & Grayson, 2005). That research, however, typically measured the content of people’s answers to the moral puzzles, not the cognitive process by which they solved the puzzles. Individuals diagnosed as HFA/AS may follow reasoning rules to arrive at moral judgments without having the kinds of moral sentiments or making the kinds of mental-state inferences that guide the judgment

of most people as they assign praise, blame, and punishment. Also, the goal/desire inferences seem less affected by autism than inferences about beliefs and complex emotions.

Measuring Social Inference: A More Sensitive Measurement of ToM

Smith and Miller (1979) found that they could measure what was at the forefront of the mind by using participant response times. Their study probed the inferences participants made about a short behavior description. For example, PERSON probed whether participants had inferred a personality. Participants never knew which inference would be probed; therefore, the time they took to answer each probe was a reasonable estimate of how accessible (and perhaps important) the probed inference was. In general, inferences that participants could make or retrieve more easily produced shorter response times. Building on that work, Smith and Miller (1983) examined what types of inferences generated quick responses. They found that inferring gender—not a mental state, but a category and type of social inference nonetheless—was faster than inferring intentionality, and that inferring intentionality was faster than inferring personality traits. Subsequent research on “spontaneous trait inferences” never compared those inferences with any other types of inferences. If earlier research had made those comparisons, perhaps the spontaneity of traits would have paled in comparison with that of other inferences. In this study, we attempt to fill that gap.

Holbrook (2006) extended the paradigm of exploring inferences by using video stimuli, streamlining the probing process, making the stimuli more natural, and tapping into people’s everyday abilities to interpret behavior. He compared five inferences about gender, intentionality, goals, belief, and personality traits. The results of four studies suggested a hierarchy of social inference in which gender is the easiest and fastest

inference to make. Intentionality and goals are almost as easy and occur almost as quickly as gender inferences, but beliefs and personality traits were less often and less quickly inferred (Malle, 2007). Nonetheless, Holbrook excluded inferences about emotions and moral judgment.

The Current Study

Researchers involved in previous studies assumed that individuals were equally capable of making social inferences. To date, however, no one has attempted to link individual differences to variations in making inferences. Furthermore, because of the theoretical relationship between A-traits and ToM, this study will evaluate whether differences are evident between neurotypical adult participants who display more autistic-like personality traits than others.

In addition, questions arise regarding the extent to which the AQ relates to the Big Five personality types (Wakabayashi, Baron-Cohen, & Wheelwright, 2006). Wakabayashi and colleagues, for example, compared a population of Japanese participants in this domain using the AQ and the NEO-PI-RI. They found that the Big Five could account for only 24% of the variance in AQ scores. Specifically, they found a moderately negative correlation between the AQ and extroversion, a small negative correlation with conscientiousness, as well as a small positive correlation with neuroticism (the inverse of emotional stability). In light of these minimal correlations, the researchers suggested that A-traits may represent extreme features outside the established personality types. Because of the minimal results in this domain, further exploration seems worthwhile. This study will, therefore, attempt to clarify which specific subcategories of the AQ (attention switching or imagination) correlate with subcategories of the Big Five (Openness, Emotional Stability, and Extraversion). Moreover, by using measurements of the Big Five and A-traits, we may better understand

the nature of individual differences in mental state inference. Finally, we will compare Big Five scores, scores of students with differing areas of study, and AQ scores, both jointly and independently, to try to determine any relationships these measures may have with mental state inferences in five chosen tasks.

Because researchers have conflicting interpretations about the nature of HFA, AS, A-traits and their relationships with ToM, and the relationship between different measures of social inference, the present study will seek to address the following questions:

- Are normally-functioning adults who display more “autistic-like” traits less likely to infer mental states when observing the behaviors of others?
- Do subcategories of the AQ relate to different types of social inference?
- Do these inferences about intentions, goals, beliefs, and thoughts fall into a hierarchal order that is the same or different from that of average individuals?
- Do the AQ and its subcategories relate to subcategories of known measurements of personality?
- Do the AQ and a personality assessment jointly or independently predict people’s ease, speed, and hierarchy of social inferences by examining personality types?

Predictions

Body and behavior-based inferences of gender and intentionality should not be difficult for people with a high frequency of A-traits. These interactions are readily available in most instances and create a “rich knowledge structure” from which to draw intentional inferences (Malle, 2007, p. D-5). In addition, goal inferences rely on the easily-viewed

physical behaviors of a target in relationship to a goal object (Malle, 2007; Wellman & Phillips, 2001). Perhaps individuals who display more A-traits have certain skills (superior visual-attention, systematic and convergent thinking) that may help the ease and speed of inferring goals (Baron-Cohen et al., 2001a; Nettle, 2005; Tager-Flusberg, 2007). Therefore, goal inferences may not be problematic if they are understood as “tendencies to act.”

Mental-state inferences about thinking or beliefs are similar in that they are high in variability and have no physical cues that can be observed (Apperly, Riggs, Simpson, Chiavarino, & Samson, 2006; Malle, 2007) and should be similar to each other in the ease and speed with which subjects infer them. Therefore, mind based inferences, should be difficult for people with pronounced A-traits but such inferences are more difficult for average people.

Personality or trait inferences should prove difficult and slow. Trait inferences require the perceiver to build on the intentionality as well as the mental-state inferences about that behavior (Malle, 2007). Other findings have suggested that trait inferences can be made spontaneously while encoding a trait-eliciting stimulus, suggesting that these inferences are automatic and can be made without the awareness of the perceiver (Winter, & Uleman, 1984). Nevertheless, no evidence in the literature addresses a relationship between trait inferences and autism. Similarly, little is known about the tendency of autistic persons to blame or praise the behavior of others (i.e., make moral judgments).

Researchers disagree about the difficulty of making moral judgments (assigning blame and praise). Some believe that moral judgments are quick and easy because perceivers relay on salient moral-emotion cues (Haidt, 2001). Other researchers have suggested that making moral judgments takes a conscious effort that requires the processing of information from a

number of sources that are at times vague. Therefore, moral judgments and inferences about emotions may take even more time than other inference types (Malle, 2007; Winter & Uleman, 1984).

Method

Participants

Participants were 59 undergraduate and graduate students at the University of Oregon in Eugene, 35 of whom were males. The age of all participants ranged from 18 to 60 ($M = 24.24$, $SD = 8.91$). The participants were recruited from all areas of study with the use of class visits, email, flyers distributed to departments, and announcements posted in high-traffic areas around campus. All recruitment efforts noted that participants would receive a cash incentive of eight dollars.

Materials

To test whether deficits in the ease, speed and hierarchy of social inference are associated with area of study, frequency of A-traits present in a nonclinical population and personality types, the following equipment, software, and research materials were used: four IBM desktop computers; four head-mounted microphones manufactured by Sennheiser; *Presentation* version 11.3, software by Neurobehavioral Systems Inc.; MediaLab V2008.1.2 software, written by Blair Jarvis, copyrighted by Empirisoft Corp.; Microsoft Excel 2007 spreadsheet software for presenting the Mini-Markers; Microsoft Word 2007 word processing software for presenting the SAMSI as well as the recording of demographic data and consent forms.

Design and Procedures

No more than four participants at a time were invited to the lab to participate in an experimental session that lasted 45 to 60 minutes.

Participants signed informed consent forms, indicating that they understood their rights as human subjects including the right to discontinue participation at any time. Participants were informed that, with their permission, their verbal answers to some questions would be recorded. They were then asked to indicate the extent to which their answers could be used for further study. Upon submitting their signed consent forms, participants were placed in one of four testing rooms, given verbal instruction, and asked to complete a series of tasks.

For the first task, participants read the “Short Assessment for Mental State Inferences” in the “Narrative Representation of Social Interaction (SAMSI)” developed by Malle and Rogers (2008). The SAMSI was designed to measure the number of social inferences participants make about the thoughts and feelings of characters in a social interaction even when no mental-state information is given in the narrative itself. After a distraction period, during which they completed the remaining measures, participants were then asked to retell the story and to explain its meaning. The purpose of this measure was twofold. First, the SAMSI was an additional measurement to assess the relationship between the A-traits and social inference. Second, the SAMSI was used to compare groups (Social and Science Groups) for differences in social inference. The major dependent variable in the SAMSI was the number of adjectives used to describe the mental states or traits of the main characters. In addition, inferences about feelings, desires, thinking and personality were secondary dependent variables.

Our primary method of measuring social inference adopted procedures from Smith and Miller (1979) and Holbrook (2006). Participants viewed short video clips, using Presentation 11.3 software, with three sets of 12 stimulus behaviors: trait-tailored, goal-tailored, and untailored. The trait- and goal-tailored sets were adapted from previous studies that used

sentences rather than videos (Hassin, Aarts, & Ferguson, 2005; Winter & Uleman, 1984). An additional set of 12 untailored clips allowed for any inference in principle. The result was 36 stimulus videos: 12 designed to elicit trait inferences, 12 to elicit goal inferences and 12 untailored videos. Also, eight practice trials, one catch trial (which instructed participants not to respond), two emotional catch trials, two intentionality catch trials (unintentional behaviors), and three control trials (which asked about emotions) were added to the mix. The first catch trial was designed to ensure that participants were not automatically responding after every behavior. The intentional catch trials were designed to ensure that participants were making meaningful responses. The emotional control and catch trials were matched with untailored behaviors and used for exploratory purposes.

In total, 52 videos were presented in one of five different sequences to counterbalance video and data bias. Therefore, the 36 experimental stimulus behaviors and the four main experimental question cues were balanced so that each participant was probed for each inference cue nine times, three times for each of the three behavior types. The presentation of the eight practice videos, however, was always first; the 11th and 23rd videos were always an unintentional catch trial; the 18th and 25th videos were always catch trials; the 14th, 30th, and 47th videos were always emotional control trials. All videos were displayed on a CRT monitor for 4 to 12 seconds. All question cues were displayed in a yellow font on a black background for three seconds after the video and doubled as the maximum response time.

For each video, participants were asked one of five random questions: did the main actor intentionally (INTENTION?) perform the behavior depicted in the video; can an observer detect the main actor's goal (GOAL?) in the situation; does the main actor reveal a personality trait (PERSONALITY?); can an observer detect what the main actor was thinking (THINKING?);

does the main actor reveal an emotion (EMOTION?) in the situation. To respond to these question cues, participants used the number pad located on the right-side of the keyboard. In rooms one and three, participants pressed the "2" key for a "yes" response, or the "1" key for a "no" response; participants in rooms two and four pressed the "1" key for "yes" and the "2" key for "no." This counterbalancing ensured that response times were independent of the keys used to respond to a question. In addition to verbal instruction for the response procedure, note cards with the words "YES," written in green, and "NO," written in red, were placed above the corresponding keys while covering the remaining keys. Also, headphones equipped with microphones placed directly in front of the mouth were used so that the participants could listen to any verbal information presented in the videos and, after their yes/no responses, provide explanations of what they had detected in the video. The dependent variables for this measure were the percentage of yes/no responses for each question cue (ease) and their subsequent response times (RT) (speed).

The primary portion of the study crossed two within-subject factors: behavior type (trait-tailored, goal-tailored, and untailored) and inference cue (intentionality, goal, thinking, and personality). Emotion represented a fifth inference cue for exploratory comparison (its corresponding behaviors were untailored). Participants received cues in five forms such that each individual sentence was paired with each cue exactly once. Forms were randomly assigned to participants.

Our secondary method of measuring social inferences also adopted the procedure from Smith and Miller (1979). Participants read stimulus sentences, using Presentation 11.3 software, with five sets of four stimulus behaviors: intentionally positive, unintentionally positive, intentionally negative and unintentionally negative. The result was 30 stimulus sentences structured so that five questions related to each of the above stimulus

behaviors and elicited inferences in each category. The remainder of the 30 questions consisted of five practice trials, two catch trials (which instructed participants not to respond), and three control trials (which asked about gender: ISMALE?). The first catch trial sought to ensure that participants did not automatically respond after every behavior while the control trials ensured that participants were making meaningful responses.

To assure proper counterbalancing, all 30 sentences were presented to participants in one of five different sequences so that the 20 experimental stimulus behaviors and the four main experimental question cues were balanced and each participant was probed for each inference cue four times, and five times for each of the four behavior types. Forms were randomly assigned to participants, but because of problems with the programming, complete balancing of the cues and behavior types were corrupted.

All sentences were displayed in white font on a CRT monitor for 4 to 12 seconds; all question cues were displayed in a yellow font on a black background for three seconds after the sentence was displayed. The time also doubled as the maximum response time. For each sentence, participants were asked one of six random questions: did the main actor intentionally (INTENTION?) perform the behavior, could the main actor's goal (GOAL?) be detected in the situation, could the main actor's thinking (THINKING?) be detected, can the gender of the main actor (ISMALE?) be determined, or were the actions of the main actor worthy of blame (TOBLAME?) or praise (TOPRAISE?). Generally, the response procedures were identical to those used for the video stimuli. The exceptions involved the blame and praise questions for which participants were instructed to rate the blame and praise on a 0 to 5 scale such that "5" indicated great praise or blame and "0" indicated no blame or praise. The dependent variables for this measure were the yes/no responses and their subsequent response times (RT).

The revised version of the “Reading the Mind in the Eyes” Test (RMET), an “advanced theory of mind test,” also helped to evaluate the ability of participants to make mental state inferences (Baron-Cohen, et al, 2001a, p. 241). The revised RMET consists of 37 pictures (the original used only 25) of the eye regions of different actors and actresses. For the current study, the RMET was modified to use only the first 18 pictures. The researchers felt that 18 responses would be more than adequate to draw valid comparisons, and the RTs would increase the sensitivity of the measure. The RMET was displayed using MediaLab, a technique that allowed the automatic recording of answers and reaction times (RTs). To complete the task, participants chose one of four displayed adjectives that they believed best described the thought or feeling the actor or actress was expressing. Participants used a computer mouse to select an adjective for each picture. For every correct answer, participants were given one point; no points were given for false answers. The total number of correct answers was the main dependent variable; RTs were the secondary dependent variable.

Following completion of the RMET, participants viewed and responded to three cartoons. They were asked to describe what was occurring and to indicate why the cartoon was supposed to be amusing. The main dependent variable for this measure was the accuracy in describing what was happening and why it was amusing (see appendix for scoring procedure). The scoring procedure assigned one point for accurately describing the event in the cartoon and one point for why it was supposed to be amusing. Therefore, participant’s scores could range from 0 to 2 for each cartoon. The number of mental-state inferences each participant made about the characters in the cartoon became an additional indication of the frequency of spontaneous inferences.

The Autism Spectrum Quotient (AQ) assessed the frequency of A-traits of participants. The AQ is a self-administered questionnaire designed to

measure the extent to which traits associated with the autism spectrum are present in normally-functioning adults (Baron-Cohen et al., 2001b). The AQ consists of 50 questions divided into five subcategories with 10 questions each: social skills, communication, imagination, attention switching, and attention to detail. All questions require a response on a 4-point, forced answer, Likert scale ranging from "definitely disagree" to "definitely agree." One point is given to any response that is consistent with "autistic-like" behavior regardless of degree; while the opposite responses were given no score. No extensive norms exist for the test, but scores of 32 or above are generally seen in individuals who had been previously diagnosed with High-Functioning Autism (HFA) or AS (Woodbury-Smith et al., 2005).

Finally, to assess whether certain personality traits are related to the AQ and differences in social inference, the Big Five personality types (Extroversion, Agreeableness, Conscientiousness, Emotionality Stability, and Openness to experience) were measured using the "Mini-Markers" developed by Saucier (1994). The 40-question survey was adopted from Goldberg's (1992) 100 robust Big Five adjectives. Despite the limited number of adjectives used in the Mini-Markers, it seems to be both a valid and reliable measure of the Big Five (Saucier, 1994; Dwight, Cummings, & Glenar, 1998). The 40-question survey is divided into sections, such that each personality type is represented by eight adjectives. Some adjectives are positively correlated, while others are negatively correlated. To complete the task, participants rated each adjective on a 9-point Lickert scale, from "1 = extremely inaccurate" to "9 = extremely accurate," based on how well they felt that adjective described themselves. The mean score for each personality type was calculated by summing all positively correlated and negatively correlated scores and dividing the result by eight.

Results

Measurements of Social Inference

Ease and Speed of Inference for Video Stimuli

The percentage of “yes” answers within each cell of the 3 x 4 design was the necessary first step to assess ease of inference. The percentage calculations ignored missing values (no answer) because they could not be clearly classified. A within-subject MANOVA test completed the analysis of the percentages.

An assessment of speed of inference focused on the average response times for “yes” responses within each cell of the design. The response times reflected average latency for saying “yes” to the goal cue in response to untailored behaviors. The analysis excluded individual latencies below 511ms because they were significantly outside the main distribution of data. If participants failed to answer “yes” in some cells, no information existed about latencies for responses making it necessary to complete sample mean-replacements for those cells. Of the 59 cases, only two were rejected due to the volume of missing data. The next step in the analysis of this variable involved a within subject MANOVA test.

The MANOVAs for both variables assessed the effects of inference cues separately within each behavior type in order to examine the possible unique patterns each type displayed. The inference cue factor typically decomposed into three orthogonal contrasts: intentionality vs. goal; thinking vs. average of intentionality and goal; and personality vs. average of thinking, goal, and intentionality. Helmert contrasts within each behavior type (intentionality vs. average of goal, thinking and personality; goal vs. average of thinking and personality; personality vs. thinking) added a necessary layer of comparative information. For all contrasts we report the results of univariate *t*-tests.

Within the untailored (Figure 1) and trait-tailored behaviors (Figure 2),

participants found goal inferences ($M = 94.7\%$ for untailored; $M = 93\%$ for trait-tailored) easier to make than intentionality inferences ($M = 86.3\%$ for untailored; $M = 75.7\%$ for trait-tailored; for untailored, $t(168) = 2.64, p = .01$; for trait-tailored, $t(168) = 3.94, p < .001$). For goal-tailored behaviors (Figure 3), however, no significant difference existed between goal ($M = 92.4\%$) and intentionality ($M = 94.2\%$) inferences [$t(168) = .33, p = \text{ns}$]. A comparison of goal inferences, to the average ease of thinking inferences ($M = 55\%$ for untailored, $M = 71.6\%$ for goal-tailored, $M = 73.4\%$ for trait-tailored), and personality inferences ($M = 45.9\%$ for untailored; $M = 46.2\%$ for goal-tailored; $M = 78.9\%$) revealed that participants still found goal inferences easier to make regardless of behavior type [for untailored, $t(168) = 9.61, p < .001$; for goal-tailored, $t(168) = 8.93, p < .001$; for trait-tailored, $t(168) = 6.25, p < .001$].

A comparison of intentionality inferences, and the average of goal, thinking and personality for untailored behaviors showed that intentionality still appeared easier [$t(168) = 5.46, p < .001$], as it did for goal-tailored behaviors [$t(168) = 6.79, p < .001$]. Nevertheless, no significant difference existed between intentionality and the average of goal, thinking and personality for trait-tailored behaviors [$t(168) = 1.3, p = \text{ns}$].

Data revealed that participants clearly found thinking inferences more difficult than the average of intentionality and goal across all behavior types [for untailored, $t(168) = 6.53, p < .001$; for goal-tailored, $t(168) = 4.8, p < .001$; and for trait-tailored, $t(168) = 2.65, p = .01$]. On the other hand, participants found thinking inferences much easier to make than personality inferences for goal-tailored behaviors [$t(168) = 4.59, p < .001$]. Still, for untailored behaviors, thinking inferences became marginally easier than personality inferences [$t(168) = 1.82, p = .07$]. See Figures 1 and 2. For trait-tailored behaviors, participants made personality inferences more easily than thinking inferences, though not significantly [$t(168) = 1.03$,

$p = \text{ns}$]. Personality inferences, when compared to the average of all other inference types, were much harder for participants considering untailored behaviors [$t(168) = 7.21, p < .001$] and for goal-tailored behaviors [$t(168) = 8.53, p < .001$]. The pattern of difficulty changed, however, for trait-tailored behaviors ($t(168) = .4, p = \text{ns}$). See Figure 4 for overall means.

For untailored behaviors (Figure 5), participants showed latencies (speed) for intentionality inferences ($M = 1527.68$ ms) that were nearly identical to those for goal inferences [$M = 1549.07, t(174) = .35, p = \text{ns}$]. Participant latencies for thinking inferences ($M = 1634.35$) were, however, greater (slower) than the average of both intentionality and goal inferences [$t(174) = 2.05, p = .045$], while personality inferences ($M = 1777.81$) were much greater than the average of the first three [$t(174) = 3.65, p < .001$]. Also, latencies for intentionality inference were less (faster) than the average of the other three [$t(174) = 2.6, p = .01$]. Similarly, goal inference latencies were less than the average of thinking and personality inferences [$t(174) = 2.65, p = .01$]. Participant latencies for thinking were also less than latencies for personality inferences for untailored behaviors [$t(174) = 2.5, p = .02$].

For goal-tailored behaviors (Figure 6), participant latencies for goal inferences ($M = 1495.58$) were less (faster) than those for intentionality inferences [$M = 1644.72, t(174) = 2.08, p = .042$]. Latencies for thinking inferences ($M = 1641.94$), however, were not significantly greater than the average of intentionality and goal [$t(174) = 1.29, p = \text{ns}$], and personality inference latencies ($M = 1967.13$). Similarly, latencies for untailored behaviors, were significantly greater than the average of the other three [$t(174) = 6.9, p < .001$]. Latencies for intentionality inference, however, were not significantly less (faster) than the average of all other latencies [$t(174) = .92, p = \text{ns}$]. While latencies for goal inferences were less than the average of thinking and personality latencies [$t(174) = 5.75, p < .001$],

latencies for thinking inferences were less than personality inferences [$t(174) = 5.06, p < .001$].

For trait-tailored behaviors (Figure 7), participants made intentionality inferences ($M = 1439.5$) faster than goal inferences [$M = 1660.2, t(174) = 4.05, p < .001$] and significantly faster than the average of goal, thinking and personality inferences [$t(174) = 7.01, p < .001$]. Participant goal inferences were faster than the average of thinking and personality inferences [$t(174) = 2.05, p = .45$], but thinking inferences were significantly slower than the average of intentionality and goal inferences [$t(174) = 4.6, p < .001$]. Personality inferences, on the other hand, caught up to the other inferences for trait-tailored behaviors and were no longer significantly slower than thinking inferences [$t(174) = 1.12, p = ns$], or the average of intentionality, goal and thinking [$t(174) = 1.42, p = ns$]. See Figure 8 for overall means.

Ease and Speed of Inference for Sentence Stimuli

For the sentence stimuli, cue and behavior type imbalances made crossings of the within-subject factors impossible. Consequently, the design of the study shifted to a pseudo-between-subjects analysis. Therefore, for thinking and goal cues, ease and speed for all cases of intentionally-positive behaviors were compared to all cases of intentionally-negative behaviors. Some checks on the data involved comparing cases of praise for intentionally-positive behaviors to cases of unintentionally-positive behavior and cases of blame for intentionally-negative behaviors to cases of unintentionally-negative behaviors. Data analysis also included comparing cases of praise for intentionally-positive behaviors to cases of blame for intentionally-negative behaviors. The percentage of yes/(yes + no) answers allowed an assessment of ease of inference. The average response latencies for yes-responses measured speed of inference. Data analysis excluded individual latencies below 511ms because they lay outside of the main distribution of data. Multiple one-way analyses of

variance (ANOVAs) allowed a comparison of the cases described above.

Participants found inferences of intentionality significantly easier to make when behaviors were intentionally positive ($M = 91\%$) than when the behaviors were intentionally negative [$M = 70\%$, $F(1, 90) = 6.71$, $p = .01$]. Similarly, participant latencies for making inferences about intentionality were less (faster) for intentionally positive behaviors ($M = 1272.65\text{ms}$) than for intentionally negative behaviors [$M = 1530.37$, $F(1, 76) = 6.99$, $p = .01$]. Thus, people are better and faster at determining the intentionality of a behavior that has positive connotations.

A similar pattern revealed itself regarding goals. Participants found inferences about goals easier when behaviors were intentionally positive ($M = 95\%$) than when behaviors that were intentionally negative [$M = 65\%$, $F(1, 107) = 18.18$, $p < .001$, $F(1, 94) = 5.43$, $p = .02$]. Also, participant latencies for goal inferences were significantly less (faster) for intentionally positive behaviors ($M = 1486.58$) than intentionally negatively intentional [$M = 1725.36$, $F(1, 86) = 5.84$, $p = .02$]. When participants considered behaviors unintentional, negative behaviors were easier to infer ($M = 45\%$) than positive behaviors [$M = 45\%$, $F(1, 82) = 1.38$, $p = \text{ns}$], but latencies revealed no significant difference in the speed of inferences between unintentionally positive behaviors ($M = 1928.41$) and unintentionally negative behaviors [$M = 2001.45$, $F(1, 52) = .38$, $p = \text{ns}$].

Participant inferences about thought revealed no significant difference in valence or latency for intentionally positive behaviors ($M = 84\%$, $M = 1608.62$) and intentionally negative behaviors [$M = 73\%$, $M = 1776.65$; for valence, $F(1, 78) = 1.37$, $p = \text{ns}$; for latency, $F(1, 33) = 2.23$, $p = \text{ns}$]. Similarly, participant responses showed no significant differences for unintentionally positive behaviors ($M = 36\%$, $M = 1867.79$) and unintentionally negative behaviors [$M = 43\%$, $M = 1995.38$; for valence, $F(1, 78) = .43$, $p = \text{ns}$; for latency, $F(1, 33) = .55$, $p = \text{ns}$]. Thus, inferences

about an actor's thoughts are equally hard across all behaviors types.

Participants found assigning praise to an intentionally positive behavior ($M = 92\%$) significantly easier than assigning praise to an unintentional behavior [$M = 26\%$, $F(1, 77) = 60.12$, $p < .001$]. Similarly, the speed at which they assigned praise was significantly faster for intentionally positive behaviors ($M = 1320.69$) than unintentionally positive behaviors [$M = 1938.64$, $F(1, 47) = 21.37$, $p < .001$]. Therefore, people are quicker and more likely to judge the behaviors of a target as worthy of praise when the behavior is purposeful. When participants assign blame, however, there is no significant difference between intentionally negative behaviors ($M = 71\%$) and unintentionally negative behaviors ($M = 65\%$), but participants were marginally faster at assigning blame to unintentionally negative behaviors ($M = 1519.81$) than to intentionally negative behaviors [$M = 1737.15$, $F(1, 61) = 2.89$, $p = .09$].

Tests to compare the ease and speed with which people assign praise to intentionally positive behaviors and blame to intentionally negative behaviors and the ease and speed for unintentional behaviors revealed that praise in instances of intentional behaviors was significantly easier for participants to assign than blame [$F(1, 77) = 6.00$, $p = .02$]. Moreover, the speed at which participants assigned praise was also significantly faster [$F(1, 64) = 14.40$, $p < .001$] than the speed at which participants assigned blame. For unintentional behaviors, however, the reverse was true. People assigned blame significantly easier, and faster, than praise [for valence, $F(1, 880) = 15.21$, $p < .001$; for latency, $F(1, 44) = 6.59$, $p = .01$]. Thus, the intentionality of a behavior has a significant effect on how people judge behaviors.

Correlations

To compare the valence (ease) and latency (speed) of sentence and video stimuli responses with all measures of A-traits and the Big Five personality

types, all mean responses were collapsed across behavior types, such that the mean of intentionally inferences consisted of the mean of the RTs for untailored behaviors, goal-tailored behaviors and trait-tailored behaviors. Similarly, the mean for reaction times for intentionally inferences for sentence stimuli consisted of the mean of RTs for intentionally positive and intentionally negative stimuli. The same was true for all RTs and Y/N responses for all cues. See Figures 4 and 8 for means.

Ease and Speed of Social Inference as a Function of Individual Differences

Comparisons of scores on the AQ with the ease and speed of social inferences for the video stimuli revealed no strong trend (see Tables 1 and 2). Still, AQ "Communication," which indicates difficulties in communicating with others, had a small but significant relationship with the ease of making inference about emotion ($r = .294, p < .05$) and the speed of reacting to emotional stimuli ($r = .315, p < .05$). Thus, as self-described deficits in communication increase, so did the difficulty of making emotional inferences. The speed with which participants made inferences also increased, if only slightly.

The data revealed few correlations between sentence RTs and the AQ, but AQ "Attention to Detail" was slightly related to RTs for intentionality ($r = -.313, p < .05$). Also, AQ "Attention Switching" was moderately related to the tendency to praise positive behavior ($r = -.421, p = .001$), while total AQ scores were only slightly related ($r = -.289, p < .05$). Nevertheless, no overall trend suggested that frequencies of A-traits, as measured by the AQ, systematically related to differences in the ease and speed of social inference for these measures.

Tests on the data detected a number of relationships between the Big Five personality types and the video and sentences stimuli. Emotional stability, for example, was significantly related to video RTs for intentionality ($r =$

.286, $p < .05$), thinking ($r = .259$, $p < .05$), and personality ($p = .354$, $p < .01$), but emotional stability was not related to the ease of inference (see Table 2). Emotional stability was also significantly related to sentence RTs for intentionality ($r = .416$, $p < .001$). Though not significant, emotional stability had an overall positive trend with sentence RTs (see Table 3). Thus, as emotional stability increases, so too did latency for responding to cues of intentionality, thinking, and personality.

Extroversion showed a significantly negative correlation with emotion RTs ($r = -.291$, $p < .05$). On the other hand, a pattern of negative correlations, though not significant, emerged between extroversion and video and sentence stimulus RTs for intentionality, goal, thinking, and personality (see Table 1). Nevertheless, no pattern emerged between extroversion and the ease of making these inferences (see Table 2). Emotional stability was somewhat related to the ease of goal inferences ($r = .279$, $p < .05$), while conscientiousness was only slightly related to the ease of blame ($r = -.280$, $p < .05$) (see Table 4), but no relationships appeared to exist between agreeableness, conscientiousness or openness to experience and the speed or ease of any of the inference types (see Tables 1-4). Overall, these results seem to suggest that people who describe themselves as more extroverted retrieve inferences slightly faster than average, while those who describe themselves more emotionally stable retrieve inferences slightly slower than average.

Because of the number of relationships between the speed of inference and both emotional stability and extroversion, multiple regression models measured the extent to which those relationships could predict the variance of RTs. In fact, the model explained 10% of the variance in intentionality RTs of the video stimuli [$R^2 = .101$, $F(2, 56) = 2.13$, $p = .05$]; 17.5% of the variance in intentionality RTs for the sentence stimuli [$R^2 = .175$, $F(2, 56) = 5.73$, $p = .006$]; 10% of the variance in thinking RTs for the video

stimuli [$R^2 = .102$, $F(2, 56) = 3.18$, $p = .05$]; and 15.6% of the variance in personality RTs for the video stimuli [$R^2 = .156$, $F(2, 56) = 5.19$, $p = .009$]. No other significant variance was predicted from this model, but with extroversion alone, a reduced model predicted more than 22% of the variance in emotion RTs [$R^2 = .226$, $F(1, 22) = 6.42$, $p = .02$].

The AQ and Big Five Personality Types

Comparisons of scores on the AQ and AQ subcategory with scores on the Big Five Mini-Markers sought to determine if A-traits, as measured by the AQ, were systematically related the Big Five personality types. The data supported the hypothesis that AQ scores would correlate negatively with extroversion and detected several other relationships. AQ "Social Skills" strongly correlated with extroversion ($r = -.662$, $p < .001$) and moderately correlated with agreeableness ($r = -.354$, $p < .01$). AQ "Communication" also strongly correlated with extroversion ($r = -.567$, $p < .001$) and moderately with agreeableness ($r = -.349$, $p < .01$). AQ "Attention Switching" moderately correlated with extroversion ($r = -.409$, $p < .001$) and emotional stability ($r = -.41$, $p < .001$). AQ "Imagination" correlated slightly with extroversion ($r = -.294$, $p < .05$) and agreeableness ($r = -.257$, $p < .05$). Overall AQ scores strongly correlated with extroversion ($r = -.641$, $p < .001$), moderately with agreeableness ($r = -.354$, $p < .01$) and emotional stability ($r = -.311$, $p < .05$). These results seem to suggest a strong relationship between the traits measured by the AQ and the Big Five personality types, especially extroversion, agreeableness and emotional stability (see Table 5).

Because the data detected strong relationships between the Big Five and the AQ, a regression model tested an *a priori* assumption that significant differences in AQ scores could be predicted jointly by levels of extroversion, agreeableness and emotional stability. Indeed, the model

predicted 53.5 % of the variance in AQ scores [$R^2 = .535$, $F(3, 55) = 21.08$, $p < .001$].

AQ and the Alternative Measures of Social Inference

Comparisons of AQ scores with responses to the Assessment for Mental State Inferences (SAMSI) tested whether A-traits, as measured by the AQ, were related to the number of spontaneous inferences people made when retelling the events in a narrative when no mental-state information is given. Pearson's correlations revealed only a small relationship between AQ "Imagination" and the total number of inferences (e.g., adjectives referring to a character's thoughts, feelings, desires and personalities) a participant made when re-telling the SAMSI ($M = 7.21$, $r = -.277$, $p < .05$). Thus, the tendency to make mental-state inferences seems to have a slight relationship with participants' self reported tendency to use their imaginations. Nevertheless, no overall trend suggested that frequencies of A-traits systematically related to variations in participant's tendency to use mental-state adjectives (see Table 5).

We hypothesized that if A-traits, as measured by the AQ, were related to deficits in social inference, participants who scored higher on the AQ would be less accurate at matching a picture of the eye region of an actor or actresses with the correct adjective placed around the picture. Similarly, we hypothesized that the time needed to make that selection would be related to frequency of A-traits. Pearson's correlations provided a way to test these hypotheses and to determine if the number of accurate inferences was related to AQ score. The test, however, failed to reveal a significant relationship between AQ scores and the accuracy of these inferences ($r = -.072$, $p = ns$). Pearson's correlations also provided a way to test whether the speed of making inferences was related to AQ scores. After excluding individual latencies greater than 9999 ms because they lay outside the

main data distribution, a Pearson's correlation failed to reveal a significant relationship between these variables ($r = .138, p = ns$).

A participant's accurate interpretation of three cartoons served as an alternative measure of social inference. Specifically, the task asked participants to describe what was occurring in the cartoon and why these cartoons were supposed to be amusing. Participants received one point for accurately describing each of these aspects of each cartoon, with a total of two points possible per cartoon. The mean score for the three cartoons was the principal comparator. Overall, participants were good at this task ($M = 1.52, SD = .44$). In addition, the mean of the thought and feeling inferences participants made about the characters in the cartoons helped to make comparisons, but participants made few of these inferences ($M = .44, SD = .48$). Moreover, no relationship between the AQ and the cartoons could be detected.

Group Comparisons

Groups and the AQ

One core hypothesis was that individuals from the sciences would display more "autistic-like" personality traits (A-traits) than those from the humanities and social sciences. Participants with majors in mathematics, physics, computer science, and biology composed the Science Group ($n = 29$), and students with majors in the humanities, social sciences, business, art, and education composed the Social Group ($n = 29$). One participant, not having selected a major, was excluded from group comparisons but included for the remainder of the analyses.

A t-test was the primary method to determine whether significant differences in frequency of A-traits could be detected between the two groups. The test did not reveal a significant difference [$t(56) = 1.546, p = ns$]. Individuals in the Science Group ($M = 20.66, SD = 6.79$) did not

score significantly higher than individuals in the Social Group ($M = 17.83$, $SD = 7.13$). In addition, independent samples t-tests examined differences between groups and the subcategories of the AQ. The tests revealed no significant differences between groups for AQ Social Skills [$t(56) = 1.49$, $p = ns$], nor for Attention to Detail [$t(56) = .062$, $p = ns$], Communication [$t(56) = 1.19$, $p = ns$] or Imagination [$t(56) = .487$, $p = ns$]. These findings suggest that area of study may not be a good indicator of frequency of A-traits, overall.

Groups and the Ease, Speed and Hierarchy of Social Inference

Independent-samples t-tests also helped to explore whether the ease and speed of inference differed between groups (Table 9). The tests revealed a significant difference in the ease of inferring personality between the Social Group ($M = 48.1\%$) and the Science Group [$M = 65\%$, $t(56) = -2.5$, $p = .015$]. Participants in the Science Group inferred personality more often than did the participants in the Social Group. Similarly, the ease of inferring goals from sentence stimuli were marginally different between the Science Group ($M = 75.6\%$) and the Social Group [$M = 61\%$, $t(56) = -1.93$, $p = .059$]. No other significant difference between groups, however, could be detected for the ease of inference (see Figures 9 & 10).

The data revealed no significant differences between the Social Group and the Science Group for any of the inference type RTs across stimulus types (see Figures 11 and 12). Nonetheless, the Science Group's RTs were slightly faster overall than the Social Group's RTs, though not significantly.

Groups and the Alternative Measures of Social Inference

Independent-samples t-tests compared group means for all types of mental-state adjectives used in the SAMSI, but revealed no significant difference between groups. Independent-samples t-tests also compared

group means for accuracy on the RMET as well as the RTs. Once again, however, the data revealed no significant differences between groups. Finally, independent-samples t-tests compared groups on the cartoon measurements. Though the results found no significant difference for the accuracy of describing the cartoons, the Social Group ($M = .58$) made slightly more mental-state inferences when describing the cartoons than did participants in the Science Group [$M = .31$, $t(53) = 2.12$, $p = .04$].

Discussion

Individual Differences in the Ease and Speed and Hierarchy of Social Inference

This study expands on previous research by asking whether the organization of multiple social inferences varies as a function of traits associated with the autism spectrum (A-traits) in nonclinical adults (Austin, 2005; Baron-Cohen et al., 2001b; Mason et al. 2008; Tager-Flusberg, 2007; Woodbury-Smith et al., 2005). We specifically explored whether varying degrees of the ease and speed of inferring mental states could be related to equally varying frequency of “autistic-like” personality features (A-traits). Kunihiro et al. (2006) explored a similar question but failed to relate A-traits and scores on the RMET, a measurement of social inference. In their study, Kunihiro et al. suggested that the failure to find a significant relationship may have been due in part to the insensitivity of the RMET. They further suggested that using reaction times in this measure might significantly increase the sensitivity.

Built on these findings, the current study measured the reaction times for sentence- and video-displayed stimuli designed to elicit multiple social inferences about such issues as intentionality, goals, and thinking, while also collecting scores and reaction times for the RMET and other measures. By including a number of measures of social inference,

we hoped to create a more sensitive array that would detect individual differences in this domain. The assumption depended upon the additional measures using yes/no responses as well as measures of reaction times to assess the accessibility of the different inference types (Smith & Miller, 1979; Smith & Miller, 1983; Holbrook, 2006; Malle, 2007). Nevertheless, despite finding a few minor correlations between some of the traits and a few of these measures (see Tables 1-5), the results revealed no strong systematic relationship between A-traits and participants' ease and speed of social inferences.

Additional analysis confirmed the findings. Based on previous findings, the scores of two groups should have displayed significantly different frequencies of A-traits. For example, Baron-Cohen et al. (2001b) found that systematic differences in the frequency of A-traits could be tracked in a large population of British undergraduates by comparing groups based on their primary area of study (major). Unlike Baron-Cohen and colleagues, we were unable to find significant differences in the frequency of A-traits of individuals divided into two groups based on major (Science Group and Social Group). Of course, the current study was limited by sample size and had a mere 29 participants per group compared with the hundreds of participants per group in the Baron-Cohen study.

Nevertheless, as hypothesized, the Science Group scored higher on the AQ than the Social Group, but the difference was not significant. Likewise, the differences found in the ease and speeds of mental state inferences between these groups were minimal. Moreover, for nearly every inference type in the video and sentence stimuli, members of the Science Group made inferences slightly easier and faster than members of the Social Group. That result was unexpected. If A-traits were related to deficits in ToM, we might still have expected to see negligible differences in the ease and speed of inference that would have favored the Social

Group, but such was not the case. Only the tendency to praise was slightly easier and faster for the Social Group than the Science Group, but again the difference was not significant. These findings seem to support a folk suspicion that area of study and AQ scores are poor predictors of deficits in making mental state inferences.

Because we were unable to determine if the traits measured by the AQ are related to deficits in social inference or executive functioning (e.g., convergent thinking) it remains unclear whether deficits in ToM are related to deficits in higher-order-rule use and executive functioning rather than a domain-specific impairment (Zelazo, Jacques, Burack, & Frye, 2002). To further examine this relationship, future studies may wish to consider an alternative measure of A-traits that relates more to systemizing and convergent thinking than does the AQ. One possible measure is the Systemizing Quotient (SQ), also developed by Baron-Cohen and colleagues (2003), that some researchers have used to demonstrate the differences between these groups (Focquaert et al., 2007). To date, however, no one has attempted to determine if the traits measured by the SQ relate to deficits in social inference.

Although an analysis of the data across all measures detected no relationship between the AQ and differences in social inference, a moderate relationship became evident between extroversion, emotional stability and the speed of inference for video and sentence stimuli. In general, extroversion correlated negatively with speed of inference but positively with emotional stability. Still, no detectable relationship existed between the ease of inference and these personality types.

Because the trend between the speed of inference and personality was exclusive—ease of inference was not related to personality type—these data may be reflecting a simple pattern of predictable behavior that accompany a given trait. For example, we might postulate that one who

is generally more extroverted will be more inclined to answer questions quickly, whereas people who consider themselves more emotionally stable might take additional time to deliberate before providing their answers. One way to address this question will be to analyze the manner in which participants gave their answers when inferring specific behaviors. For example, examining the time between indicating inference retrieval and the time needed to report that inference verbally might help to distinguish people who are spontaneously answering without having a specific inference in mind and those who immediately report their inferences when they come to mind. If extroversion and emotional stability do, indeed, have a significant relationship with these processes, we might expect to see systematic differences in the answers and reporting times of different social inferences as a function of these traits, such that higher levels of extroversion might relate to immediate reports, while emotional stability may relate to more thoughtful answers.

Hierarchy of Social Inference

While testing for relationships between A-traits and deficits in the ease, speed of social inference, we found support for Holbrook (2006) and Malle (2007) who suggested a hierarchal structure of social inference. Evidence from the current study revealed that, despite the frequency of A-traits, inferences relying on body and behavioral cues (categorical, intentionality, and goal) were much easier and faster than mental-state (thinking) and trait inferences (personality), as both Holbrook and Malle had predicted. The current data, however, had abnormalities. For example, Holbrook (2006) found that categorical inferences were faster than intentionality inferences; this was not the case in our study. Only when comparing differences in ease and speed of inferences from sentence stimuli was intentionality much easier and faster than categorical inferences. That result, however, may reflect the fact that in the sentences stimuli, a participant could infer

gender only if the gender of the character was specified in a given sentence. Therefore, the finding most likely reflects problems in the sentence stimuli rather than a major difference from previous studies. Thus, future research efforts may need to adapt the video stimuli to accommodate categorical inferences.

We further extended the video stimuli by introducing cues to prompt emotional inferences. Participants found that emotional inferences were harder to make and took more time than all other inference types, a fact suggesting that emotional inferences are less accessible. Also, the stimuli the study used to elicit emotional inferences may have played a role in the results. For example, participants made emotional inferences only from untailored behaviors (e.g., they were not designed to elicit any particular inference), whereas the other inferences were paired with goal-tailored and trait-tailored behaviors. The tailoring had a significant effect, especially for personality inferences, such that when inference cues for personality were paired with trait-tailored behaviors, the inferences were significantly easier and faster than they were for goal or untailored behaviors, a result consistent with previous studies (Winter & Uleman, 1984). It may be that to have a better understanding of the accessibility of making inferences about emotion and its place in the hierarchy of social inference, stronger tailored stimuli are required. For example, a video that depicts a situation in which emotions are salient (e.g., a couple arguing), may promote easier and faster emotional inferences compared to a situation in which emotions are less salient (e.g., a person walking down the street).

An additional expansion of the sentence stimuli included cues to elicit moral judgments (e.g., blame and praise) to assess a possible relationship between the process of moral judgment and other inferences. While the ease and speed of the other inference types were correlated, respectively, those correlations were, for the most part, independent of the tendency

to assign blame or praise. Likewise, little correlation existed between the time participants took to reach decisions about blame or praise and the latencies for other inferences. Those findings seem to suggest that the processes by which individuals answer moral questions are independent of the processes for making other spontaneous inferences. Nevertheless, as participants made moral judgments about a behavior, the ease and speed with which they did so appeared to be affected by the intentionality of the observed behavior. Therefore, according to these data, someone witnessing a negative act, despite the intentions of the target's behavior, will be quick to blame. In contrast, praising someone's behavior requires detection of deliberate positive action.

A-Traits and the Big Five

Wakabayashi et al. (2006) suggested that the traits measured by the AQ in a Japanese population have only a minimal relationship with extroversion, emotional stability, and conscientiousness. The results indicate that the AQ tapped traits that fall outside of the Big Five. To test that assertion, we used an alternative measurement of the Big Five to determine if a similar pattern could be found in a North American population. The results of this study, however, found that the traits measured by the AQ were strongly related to extroversion and moderately with agreeableness and emotional stability. In fact, those three personality types accounted for over 50 percent of the variance when regressed on total AQ scores, more than double the percentage found by Wakabayashi and colleagues. The strength of the relationship was such that it challenges the validity of the AQ to tap traits other than those in the Big Five. If that is indeed the case, a high score on the AQ could just as easily be interpreted as a representation of someone who is shy, cold, and neurotic as it could someone who may have high-functioning autism, or at least traits resembling it. These findings suggest that, rather than a measurement of traits that fall outside

of the Big Five, the AQ is simply a measurement of features that can be described by known measurements of personality and may have little to do with the processes governing social inference. Further research should consider comparing the AQ with multiple measures of personality to better understand the traits the AQ measures. One reasonable conclusion, therefore, is that little relationship exists between the AQ and the ease and speed of social inference outside of those that could be detected by other known personality types.

Limitations

Some significant limitations of this study have been addressed, but others deserve to be mentioned. Primarily, the limited number of participants made it difficult to insure that we had sufficient power to substantiate early findings. We hope that with additional funds, we can recruit additional participants to increase this power.

Limitations affecting the findings stemmed from the programming used to present sentence stimuli to participants and for which participants could make inferences. The study was designed so that for each type of inference participants would see a video-displayed sentence designed to elicit a negative response or a positive response. Unfortunately, some aspects were overlooked in the programming. Corrections already in process should address this problem so that future participants will have the proper counterbalancing of these measures.

Because the analysis of the SAMSI and the cartoons required the coding of answers to open-ended questions, additional coders would have been an asset. Unfortunately, no other personnel were available for coding. For future analysis, additional coders will be recruited to insure accurate analysis of these data.

Conclusion

This initial data analysis failed to support the hypothesis that deficits in the ease, speed and hierarchy of social inference systematically relate to varying frequencies of "autistic-like" traits in a nonclinical population. Still, we did find that extroversion and emotional stability had inverse relationships with inference retrieval times. These early results raise questions not only about the validity of the AQ as something more than another measurement of personality, but also suggest that an organization of multiple social inferences, though robust, may have some susceptibility to variation due in part to individual differences. While this study is ongoing, further research will also be needed to confirm or to add clarity to these early results.

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Table 1: Correlations for Speed of Inference (Video Stimuli RTs)

Variable	Intentionality (RTs)	Goal (RTs)	Thinking (RTs)	Personality (RTs)	Emotion (RTs)
Intentionality (RTs)	1.000	.62***	.571***	.543***	.32**
Goal (RTs)	.62***	1.000	.545***	.601***	.448***
Thinking (RTs)	.571***	.545***	1.000	.555***	.277*
Personality (RTs)	.543**	.601**	.555***	1.000	.444***
Emotion (RTs)	.32**	.448***	.277*	.444***	1.000
Intentionality (YN)	-.110	-.045	-.030	.030	-.050
Goal (YN)	-.200	-.180	-.070	-.070	-.210
Thinking (YN)	-.140	-.220	-.210	-.120	-.050
Personality (YN)	.120	.070	.130	-.030	.060
Emotion (YN)	-.039	-.105	-.130	-.229	-.017
Intentionality (S. RTs)	.382**	.357**	.284*	.282*	.105
Goal (S. RTs)	.456***	.426***	.500***	.462***	.108
Thinking (S. RTs)	.346**	.389**	.423***	.442***	.268*
Praise (S. RTs)	.224	.208	.252	.227	.082
Blame (S. RTs)	.335*	.076	.157	.090	.031
Intentionality (S. YN)	-.062	.025	.034	.163	.154
Goal (Sent. YN)	.006	-.082	.172	.253	-.208
Thinking (Sent. YN)	.116	-.102	.086	.142	.014
Praise (Sent. YN)	.032	-.128	-.043	-.173	-.115
Blame (Sent. YN)	.062	.066	.218	.247	-.036
SAMSI TOTAL	-.147	-.174	-.185	-.255	-.071
SAMSI AFFECT	-.180	-.225	-.255	.302*	-.156
SAMSI FEELINGS	-.170	-.210	-.27*	-.295*	-.272*
SAMSI DESIRE	-.114	-.147	-.120	-.179	.077
SAMSI THINKING	-.065	-.021	-.033	-.040	.060
SAMSI PERSONALITY	.082	.038	.104	.001	.092
Cartoons Scores	-.146	-.283*	-.03	-.074	-.194
Cartoon inferences	-.112	.007	.224	.056	-.176
Mind Eyes	-.109	-.05	-.068	.035	.087
RMET RTY	.090	.213	.179	.327*	.187
Extroversion	-.137	-.252	-.185	-.175	-.291*
Agreeableness	.089	-.010	-.042	-.151	-.195
Conscientiousness	.108	.105	.027	-.021	.090
Emotional Stability	.286*	.162	.259*	.354**	-.013
Openness to Experience	.080	-.020	-.039	-.019	.147
AQ	-.058	.113	.092	-.041	.236
AQ Social Skills	-.026	.138	.1	.025	.209
AQ Attention Switching	-.108	.029	.005	-.021	.174
AQ Attention to Detail	.009	-.04	.082	-.237	-.116
AQ Communication	-.027	.176	.116	.071	.315*
AQ Imagination	-.040	.050	-.012	.005	.177
Group	-.057	-.225	-.03	-.146	-.287

*** p .001 ** p .01 * p .05

Table 2: Correlations for Ease of Inference (Video Stimuli)

Variable	Intentionality (YN)	Goal (YN)	Thinking (YN)	Personality (YN)	Emotion (YN)
Intentionality (YN)	1.000	.321*	.094	-.045	-.231
Goal (YN)	.321*	1	.268*	.264*	-.095
Thinking (YN)	.094	.268*	1	.435***	.173
Personality (YN)	-.045	.264*	.435***	1	.383**
Emotion (YN)	-.231	-.095	.173	.382**	1.000
Intentionality (Sent. RTs)	-.035	-.136	-.05	-.01	-.225
Goal (Sent. RTs)	.109	.129	-.258	-.072	-.161
Thinking (Sent. RTs)	-.198	-.136	-.063	.103	.139
Praise (Sent. RTs)	-.036	-.041	.157	.133	-.006
Blame (Sent. RTs)	-.158	.083	.163	.27	.139
Intentionality (Sent. YN)	.292*	.191	.037	.071	-.074
Goal (Sent. YN)	.163	.418***	.331**	.241	.078
Thinking (Sent. YN)	.008	.211	.204	.23	.235
Praise (Sent. YN)	.345**	.265*	.169	.163	-.04
Blame (Sent. YN)	-.196	.164	-.086	.106	.043
SAMSI TOTAL	-.136	-.161	.053	.010	.162
SAMSI AFFECT	-.115	-.167	.047	-.017	.209
SAMSI FEELINGS	-.075	-.066	.123	.117	.356**
SAMSI DESIRE	-.121	-.235	-.080	-.197	-.091
SAMSI THINKING	.009	-.020	.017	-.039	-.083
SAMSI PERSONALITY	-.155	-.074	.031	.112	.089
Cartoons Scores	-.015	-.013	-.049	-.060	-.127
Cartoon inferences	.016	.050	-.038	-.058	.046
Mind Eyes	.031	-.118	-.032	.023	.037
RMET RTY	-.015	-.013	-.049	-.060	.106
Extroversion	.046	.118	.014	-.012	-.213
Agreeableness	.034	-.018	-.130	.025	.000
Conscientiousness	-.084	-.193	-.202	-.014	.163
Emotional Stability	.040	.082	.208	.079	-.155
Openness to Experience	.016	-.086	-.129	-.027	-.065
AQ	-.142	.042	-.046	.066	.217
AQ Social Skills	-.213	.142	.079	.066	.213
AQ Attention Switching	.029	-.059	-.170	-.152	.123
AQ Attention to Detail	-.140	-.031	.052	.078	.038
AQ Communication	.013	-.042	.026	.183	.294*
AQ Imagination	-.158	.125	-.169	.035	.018
Group	-.059	.220	.110	.317*	.150

*** p .001

** p .01

* p .05

Table 3: Correlations for Speed of Inference (Sentence Stimuli RTs)

Variable	Intentionality (S. RTs)	Goal (S. RTs)	Thinking (S. RTs)	Praise (S. RTs)	Blame (S. RTs)
Intentionality (S. RTs)	1.000	.294*	.221	.480***	.137
Goal (S. RTs)	.294*	1.000	.313*	.155	.163
Thinking (S. RTs)	.221	.313*	1.000	.230	-.010
Praise (S. RTs)	.480***	.155	.230	1.000	.248
Blame (S. RTs)	.137	.163	-.010	.248	1.000
Intentionality (S. YN)	.041	.146	-.011	-.205	.177
Goal (S. YN)	.153	.040	.040	.093	.465
Thinking (S. YN)	.101	-.079	-.013	.178	.314
Praise (S. YN)	.073	.141	-.081	.349*	.290
Blame (S. YN)	-.126	.220	.111	.028	-.015
SAMSI TOTAL	-.202	-.257	-.233	-.125	.090
SAMSI AFFECT	-.135	-.364**	-.268	-.102	.056
SAMSI FEELINGS	-.182	-.393*	-.295*	-.080	.157
SAMSI DESIRE	-.006	-.158	-.109	-.073	-.137
SAMSI THINKING	-.196	.001	-.030	-.083	-.036
SAMSI PERSONALITY	-.099	.095	-.042	-.055	.199
Cartoons Scores	-.101	-.027	-.309*	.094	.161
Cartoon inferences	.014	.153	.064	.066	.182
Mind Eyes	.088	.109	.025	.143	.313*
RMET_RTY	-.075	.059	.146	-.104	.180
Extroversion	.048	-.092	-.213	-.165	-.165
Agreeableness	.124	.096	.164	-.295	-.157
Conscientiousness	.1	-.114	.132	.259	.051
Emotional Stability	.416***	.161	.233	.112	.274
Openness to Experience	.076	-.001	.003	.145	-.088
AQ	-.178	.071	.084	.15	-.034
AQ Social Skills	-.051	.044	.074	.15	.005
AQ Attention Switching	-.109	.068	-.004	-.087	-.197
AQ Attention to Detail	-.313*	.068	-.118	.168	.103
AQ Communication	-.073	.029	.157	.237	.035
AQ Imagination	-.069	.033	.166	.064	-.055
Group	-.062	-.015	-.203	.074	-.100

*** p .001 ** p .01 * p .05

Table 4: Correlations for Ease of Inference (Sentence Stimuli)

Variable	Intentionality (S.YN)	Goal (S.YN)	Thinking (S.YN)	Praise (S.YN)	Blame (S.YN)
Intentionality (S.YN)	1.000	.269*	.179	.342**	-.056
Goal (S.YN)	.269*	1.000	.565***	.210	.166
Thinking (S.YN)	.179	.565***	1.000	.153	.124
Praise (S.YN)	.342**	.210	.153	1.000	-.085
Blame (S.YN)	-.056	.166	.124	-.085	1.000
SAMSI TOTAL	-.092	-.100	.015	.123	-.072
SAMSI AFFECT	-.074	-.126	.029	.068	-.144
SAMSI FEELINGS	-.067	-.012	.119	.127	-.100
SAMSI DESIRE	-.052	-.231	-.111	-.046	-.147
SAMSI THINKING	.152	.001	-.031	.073	-.005
SAMSI PERSONALITY	-.286*	.000	.025	.155	.143
Cartoons Scores	.180	.203	.169	.158	.126
Cartoon inferences	.084	.110	.038	.107	.111
Mind Eyes	-.112	.142	.209	.130	.065
RMET RTY	.010	-.058	-.028	.070	.103
Extroversion	.039	-.092	-.167	.242	-.251
Agreeableness	-.006	-.126	-.085	.040	-.156
Conscientiousness	-.114	-.098	-.107	-.017	-.280*
Emotional Stability	.078	.279*	.167	.175	.024
Openness to Experience	.204	-.163	.001	.154	-.227
AQ	-.026	.008	.109	-.290*	.123
AQ Social Skills	.059	.196	.188	-.198	.173
AQ Attention Switching	-.166	-.129	-.053	-.421***	-.042
AQ Attention to Detail	.034	-.021	.046	.039	-.001
AQ Communication	-.046	-.037	.054	-.205	.080
AQ Imagination	.032	-.009	.114	-.165	.196
Group	.015	.249	.185	-.112	.172

*** $p \leq .001$

** $p \leq .01$

* $p \leq .05$

Table 5: Correlation for the AQ

Variables	Grp	AQ	AQ Soc.Skil ls	AQ Attn. Swth.	AQ Attn Detail	AQ Com.	AQ Imag.
Group	1.000	.202	.196	.008	.235	.157	.065
AQ	.202	1.000	.787***	.675***	.345** *	.816***	.666***
AQ Social Skills	.196	.787***	1.000	.423***	.103	.578***	.408***
AQ Attn. Swth.	.008	.675***	.423***	1.000	-.049	.511***	.326*
AQ Attn. to Detail	.235	.345*	.103	-.049	1.000	.086	.051
AQ Communicati on	.157	.815***	.578***	.511***	.086	1.000	.478***
AQ Imagination	.065	.666***	.408***	.326*	.051	.478***	1.000
Extroversion	-.148	-.641***	-.662***	-.409***	-.131	-.567***	-.294*
Agreeableness	-.044	-.354**	-.381**	-.115	-.039	-.349**	-.257*
Conscientious ness	.027	-.056	-.102	-.1	.119	-.074	-.007
Emotional Stability	-.046	-.311*	.053	-.410***	-.227	-.211	-.289*
Openness	-.146	-.241	-.147	-.212	.064	-.157	-.363*
SAMSI TOTAL	.122	-.04	-.003	.124	.034	-.04	-.277*
SAMSI AFFECT	.091	-.079	-.044	.058	-.035	-.01	-.258
SAMSI FEELINGS	.083	-.061	.01	.018	.008	-.034	-.228
SAMSI DESIRE	.061	-.069	-.1	.094	-.082	.03	-.186
SAMSI THINKING	.12	.041	.119	.113	.119	-.1	-.138
SAMSI PERSONALIT Y	.018	.013	-.045	.115	.062	-.002	-.089
Cartoons Scores	.127	.021	.072	-.014	.131	-.14	.024
Cartoon inferences	-.28*	-.039	-.068	.044	.44	-.0051	-.095
Mind Eyes	-.127	-.072	-.036	.05	-.124	.029	-.185
RMET RTY	.07	.138	.062	.087	-.038	.246	.096

*** p .001

** p .01

* p .05

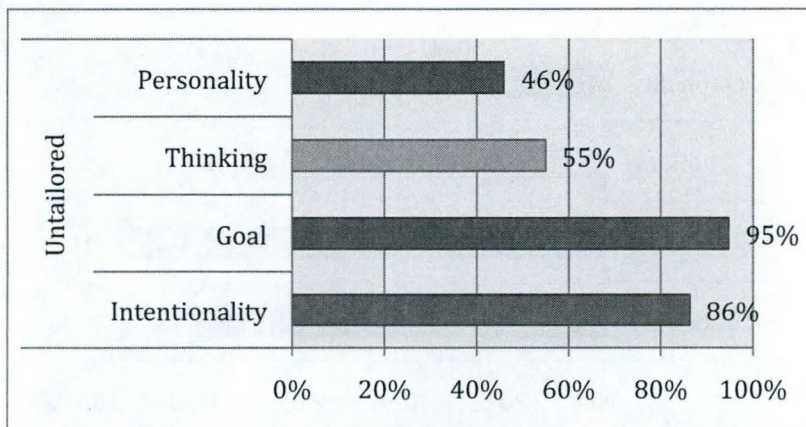


Figure 1. Hierarchy of “Yes” responses to untailored video stimuli.

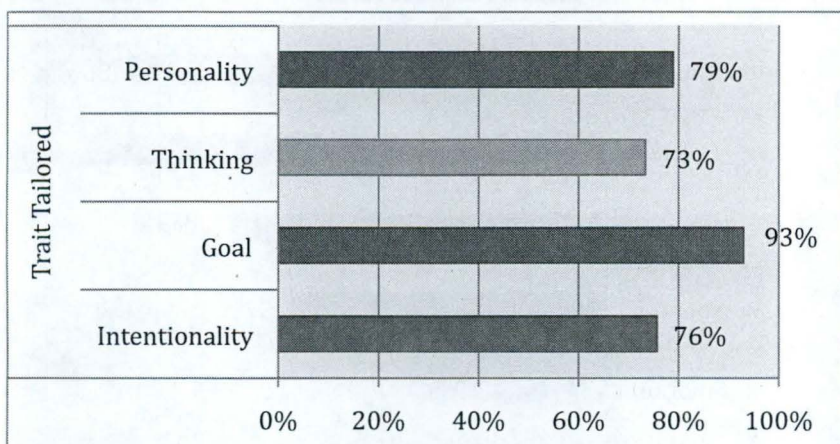


Figure 2. Hierarchy of “Yes” responses to trait-tailored video stimuli.

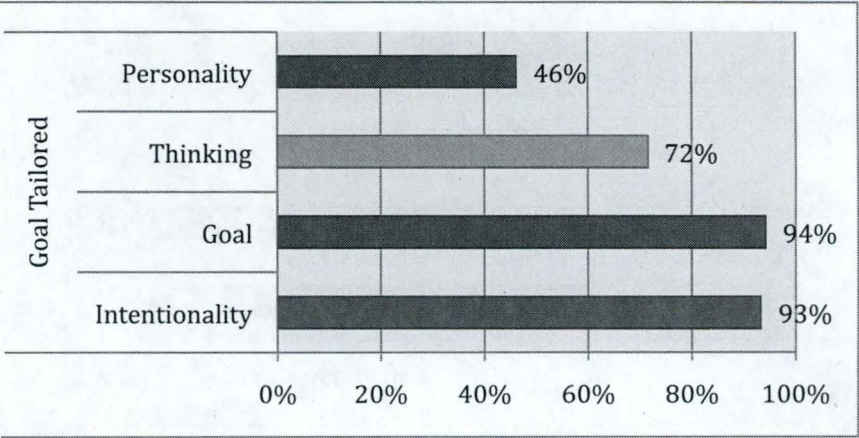


Figure 3. Hierarchy of “Yes” responses to goal-tailored video stimuli.

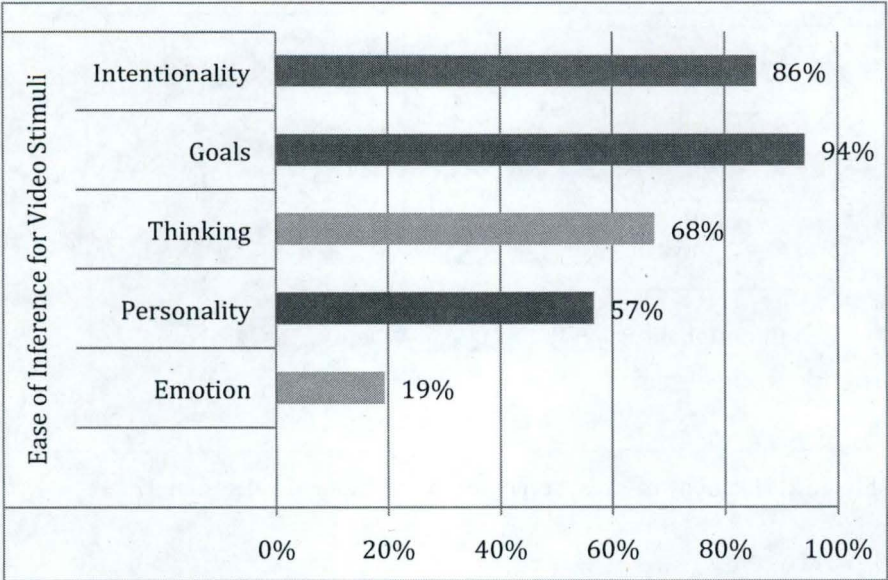


Figure 4. Hierarchy of “Yes” responses overall (video stimuli).

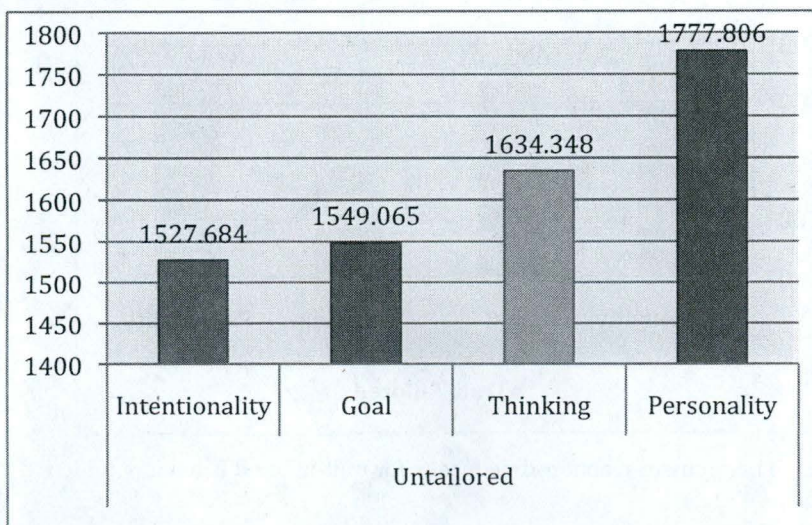


Figure 5. Hierarchy of reaction-time means for untailored behaviors (video stimuli).

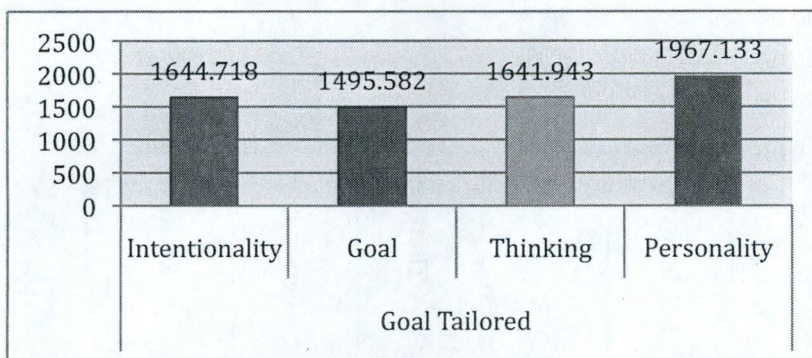


Figure 6. Hierarchy of reaction-time means for goal-tailored behaviors (video stimuli).

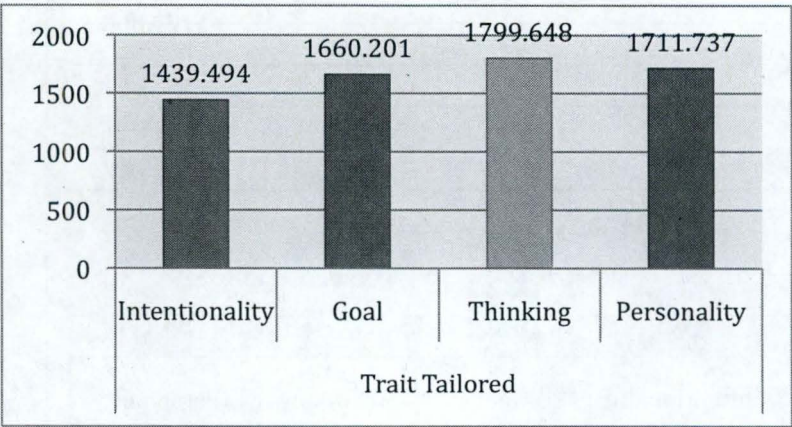


Figure 7. Hierarchy of reaction-time means for trait-tailored behaviors (video stimuli).

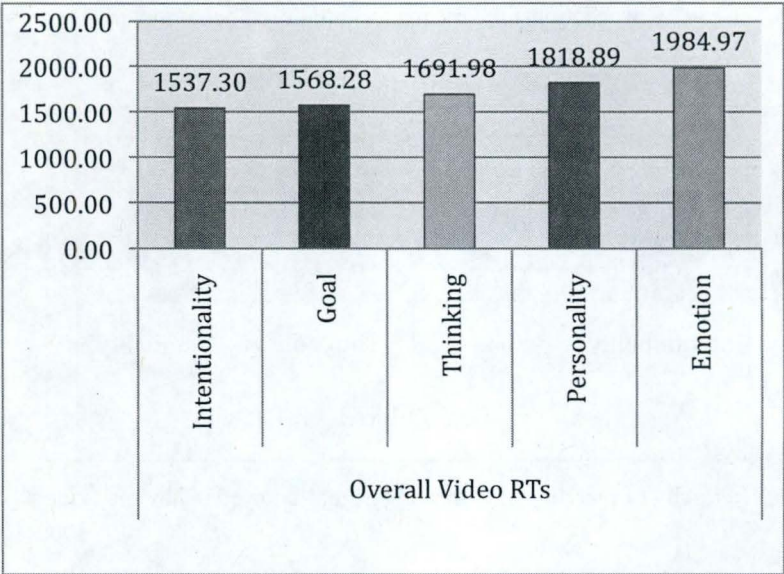


Figure 8. Hierarchy of reaction-time means overall (video stimuli).

“Autistic-like” Personality Traits in Neurotypical Adults: Examining Possible Differences in the Ease, Speed and Hierarchy of Social Inference

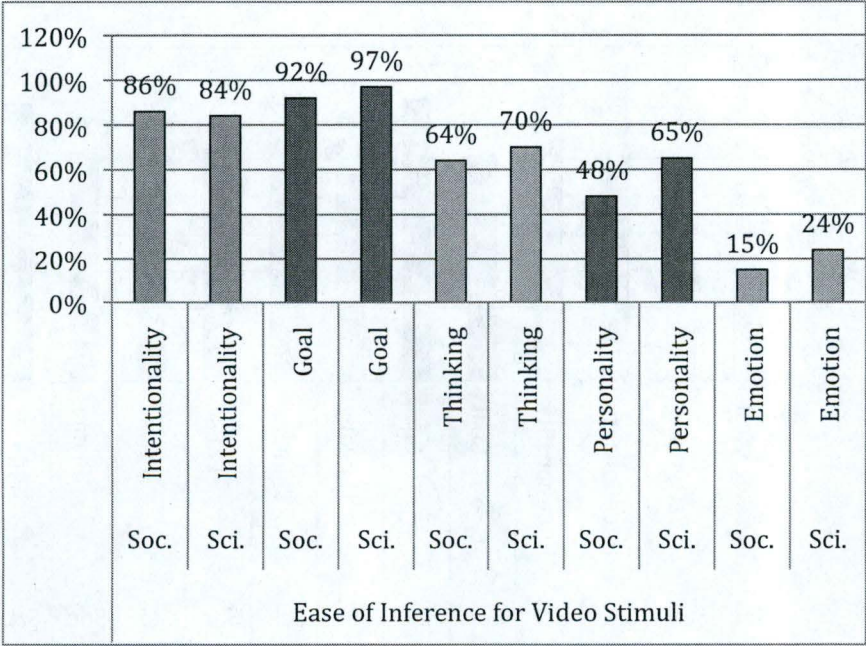


Figure 9. Group comparisons of ease of inference for video

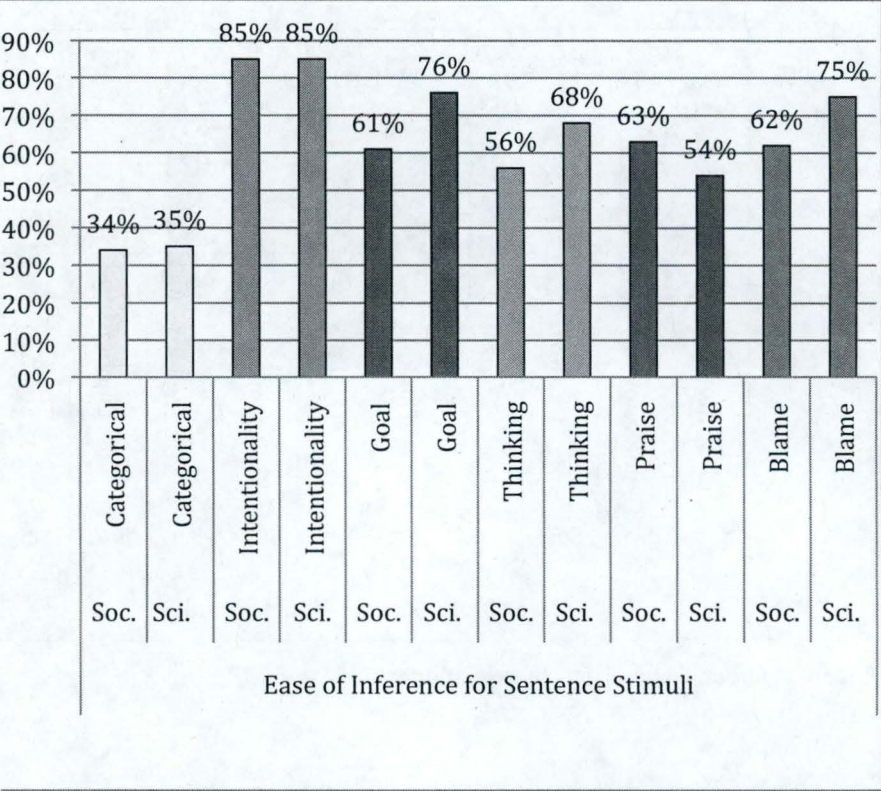


Figure 10. Group times comparisons of ease of inferences for sentence-stimuli.

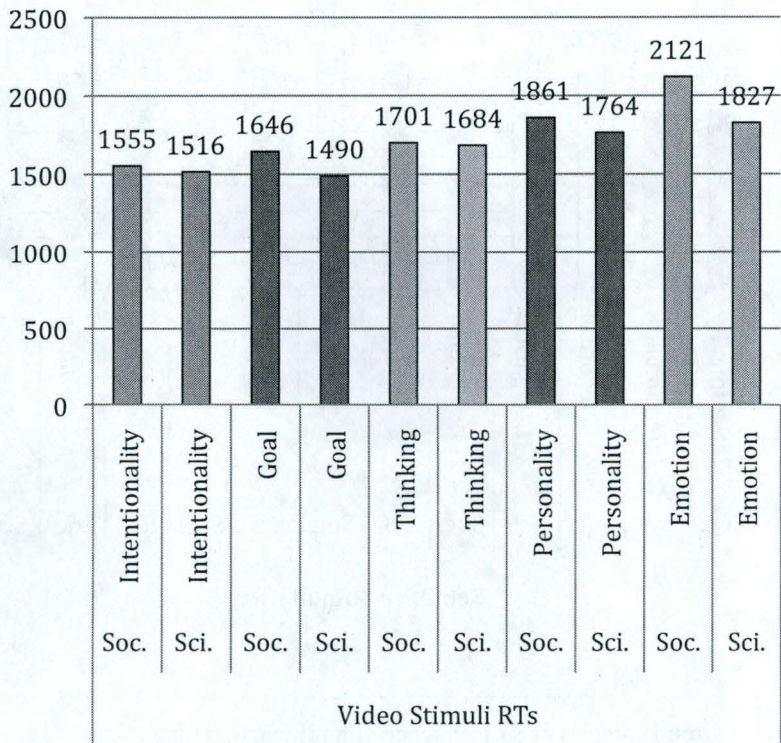


Figure 11. Group comparisons of video-stimuli reaction times.

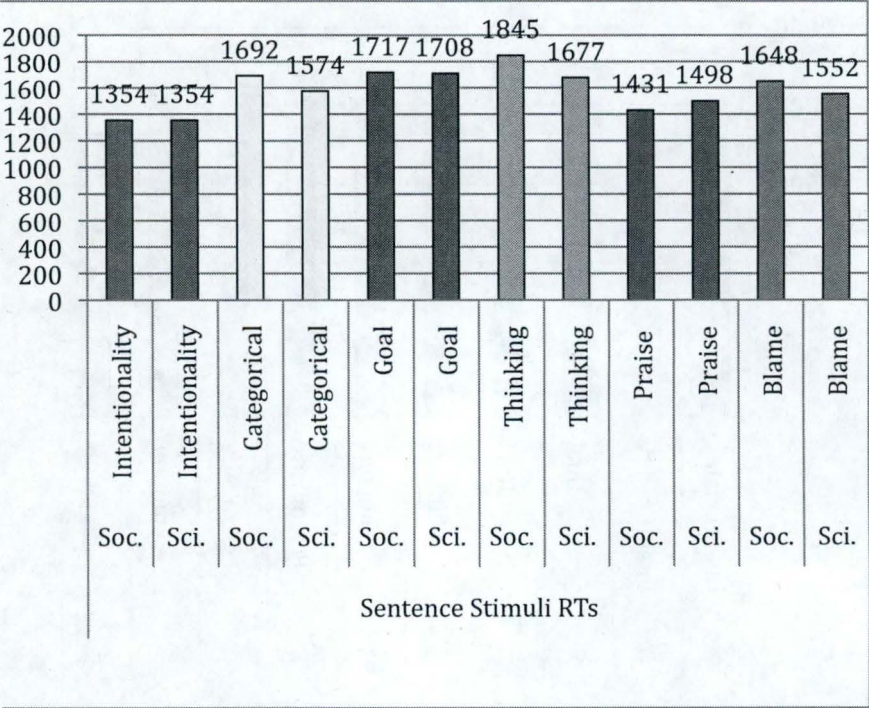


Figure 12. Group comparisons of sentence-stimuli reaction times.

Appendix

Instructions for evaluating cartoon answers.

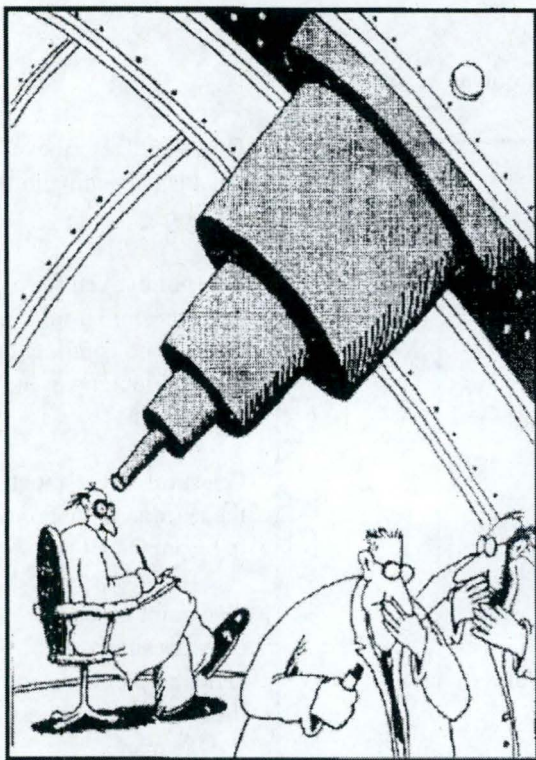


Question: Describe what is happening in the cartoon?

One point given for answers similar to:
"The piano is falling on the man looking at the stool."

Question: What about the cartoon is supposed to be amusing?

One point given for answers similar to:
"He's so preoccupied by the stool that he doesn't see the piano."

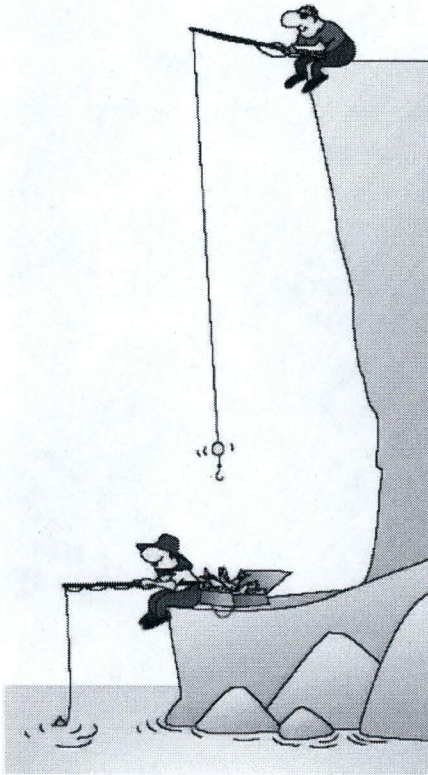


Question: Describe what is happening in the cartoon?

One point given for answers similar to: "The scientist was looking through a microscope and was pranked by getting his eyes with black rings on them and his fellow scientists are laughing at him."

Question: What about the cartoon is supposed to be amusing?

One point given for answers similar to: "The fact that a classic prank was committed on a scientist."



Question: Describe what is happening in the cartoon?

One point given for answers similar to: "Two guys are fishing and one is fishing for the fish the other one already caught."

Question: What about the cartoon is supposed to be amusing?

One point given for answers similar to: "He is fishing for what the other guy already caught."

Game Theory in Behavioral Science: How Bounded Rationality Transforms the Traditional Game-Theoretical Models

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Mathematics and Economics

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Abstract

Economists and sociologists have applied classical and evolutionary game theory to the human context. Players' actions in laboratory experiments or daily life, however, do not always conform to predictions drawn from the theories, especially on an individual basis. Thus, in recent years, economists have focused greater attention on behavioral game theory, in which players are assumed to be boundedly rational. This paper aims to illustrate how bounded rationality is modeled in game-theoretic models, as well as how behaviors can be modeled in long-term games.

1 Introduction

Imagine going to a party where the following game was played. Each participant picked a number between 0 and 100. The person(s) whose number was the closest to seventy percent of the average would win a prize of a certain monetary amount. Which number should a player pick? Assuming the numbers selected were randomly distributed, the average would be around 50; thus a good choice would be 35. But other participants might recognize the same fact, so that the average would come out to be around 35, making 25 a good choice. Once again, however, other

players would realize this too, so that now a player would want to pick 18, instead of 25. This process could continue until the outcome became 0, and consequently the iteration finally stopped. Suppose a player had learned game theory, assumed that players were fully rational, and chose the number 0. Surprisingly, the average came out to be 27. How would that happen? The reasoning process was impeccable in light of the Nash equilibrium principle, one crucial element in game theory, but it failed because people were not equally or fully rational. The above game scenario is one version of the classical game called beauty contest, which will be discussed more in a later section. When classical game theory is employed in the human behavioral context, we often encounter problems because of bounded rationality and other unforeseen factors. As a result, the study of behavioral game theory has emerged.

Game theory, a branch of applied mathematics, deals with strategies among rational players with respect to their preferences in game-theoretic models. The idea of games dates back to the 18th century, but the first formal publication was *Theory of Games and Economic Behavior*, by John von Neumann and Oskar Morgenstern in 1944 (Osborne, 2004, p. 2). Thanks to the rapid development of behavioral economics, newer work has shown that the classical game theory may not always indicate the strategy that a player ought to or will employ. In 1982, Maynard Smith published *Evolution and the Theory of Games*, which was a milestone in the development of evolutionary game theory (EGT). Smith observed in the preface that, “[p]aradoxically, it has turned out that game theory is more readily applied to biology than to the field of economic behaviour for which it was originally designed.” Despite the fact that EGT was first designed for biological evolution, sociologists also have found the theory exceptionally valuable as they explore cultural and social evolution.

Camerer (1997) defined behavioral game theory as a theory that

“aims to describe actual behavior, is driven by empirical observation (mostly experiments), and charts a middle course between over-rational equilibrium analyses and under-rational adaptive analyses” (p. 167). One of the main goals for behavioral game theorists is to “replace descriptively inaccurate modeling principles with more psychologically reasonable ones, expressed as parsimoniously and formally as possible” (Camerer, 1997, p. 185). And that goal is precisely the challenge.

Derived from classical game theory, behavioral game theory alters one major assumption of players from full rationality to bounded rationality. In addition, with a strong connection to evolutionary game theory, behavioral games can adapt the game models of biological evolution with appropriate modifications to help understand social or cultural evolution. The element that makes behavioral game theory unique is the human factor. Human beings do not always act in ways to maximize utility because humans are not capable of being fully rational. Therefore behavioral game theorists have set their focus on human behaviors in particular circumstances employing psychological and sociological theories. On the other hand and in the long run, human behavior does fall into certain patterns. Although researchers have, in some cases, used evolutionary game theory to analyze certain behavioral evolutions, long-term games are rarely presented explicitly in the studies so far. Thus I will attempt to discover appropriate evolutionary game-theoretic models for long-term human behavior framework.

2 Introduction to Game-theoretic Models

Game theory, as other sciences, contains a collection of models. The models consist of concise elements and reasonable assumptions to capture the essence of the situation and yet retain its simplicity. Because of the nature of behavioral game theory, we need to offer a brief overview of both classical game theory and evolutionary game theory.

2.1 Classical Game Model

Von Neumann and Morgenstern saw a decision under risk as a choice between lotteries with the decision maker trying to maximize the expected utility. To define rational decision maker, they suggested descriptive statements by means of six axioms. Earl Hunt (2007) models them after one presentation developed by R.D. Luce and H. Raiffa (pp. 140-141).

Axiom 1. All lotteries of the form (x, p, y) are in $\mathbf{A}$.

Axiom 2. The relation $\succsim$ weakly orders all members of $\mathbf{X}$.

Axiom 3. $((x, p, y), q, y) \approx (x, pq, y)$.

Axiom 4. $(x \approx y) \Rightarrow (x, p, z) \approx (y, p, z)$.

Axiom 5. $(x \succsim y) \Rightarrow (x \succsim (x, p, y) \succsim y)$.

Axiom 6. If $x \succsim y \succsim z$, then for some p , the relation $y \approx (x, p, z)$ holds.

The six axioms above assume that $\mathbf{X}$ is a set of possible outcomes of a decision, $\mathbf{A}$ is in the form of (x, p, y) , x and y are both members of $\mathbf{X}$, and p is a probability associated with x . For example, based on axiom 2, someone who has a weak preference ordering for transportation options so that *plane* $\succsim$ *train* and *train* $\succsim$ *automobile*, should also have the weak preference ordering, *plane* $\succsim$ *automobile*. The implications are called comparability and transitivity. The symbolic expression for transitivity is:

$$(x \succsim y) \cdot (y \succsim z) \Rightarrow (x \succsim z).$$

Further, axiom 5 represents a situation similar to a possible preference for cakes. For example, someone who likes chocolate cake better than vanilla cake, will then like chocolate cake at least as much as any randomization between chocolate and vanilla cake, and like any randomization between chocolate and vanilla cake at least as much as vanilla cake.

In classical games, players are assumed to be fully rational in the sense of expected utility theory and to know the specification of the game. The

expected utility is determined by the possible outcomes, or payoffs, and their corresponding probabilities. Suppose a lottery has a set of payoffs $x_1, x_2, \dots, x_n \in \mathbb{R}$ with corresponding probabilities $p_1, p_2, \dots, p_n \in [0,1]$ and $\sum_{i=1}^n p_i = 1$. The expected utility is defined to be $E = \sum_{i=1}^n x_i p_i$ (Gintis, 2000, p. 41). Notice that the expected utility is calculated based on payoffs, rather than monetary values, because utility functions for objective value are generally non-linear (Hunt, 2007, p. 143). Moreover, each player should have consistent preferences and mutually consistent beliefs. Although classical game theory has its limitations as it has been tested in laboratory experiments, it still offers a comprehensive framework. With “an appropriate set of Bayesian priors concerning the state of nature,” boundedly rational individuals can be considered fully rational (Gintis, 2008, p. 2).

2.2 Evolutionary Game Model

An evolutionary game borrows from the idea of evolution by natural selection. The individual organisms or species, as players, possess sets of strategies (i.e. all of the feasible evolutionarily strategies) consisting of heritable phenotypes. Payoffs are measured in terms of fitness, which is defined as “the expected per capita growth rate for a given strategy and ecological circumstance” (Vincent & Brown, 2005, p. 16). The main distinction from classical game theory, according to Vincent and Brown, concentrates on the role of strategies. In evolutionary game theory, strategies are preserved over time through generations, while players inherit rather than choose their strategies. Occasionally mutations occur, producing novel strategies. Furthermore, in evolutionary game theory, players are in groups consisting of evolutionarily identical individuals; that is, individuals are grouped with others who have the same strategy set and the same expected payoffs. Another crucial distinction of evolutionary games is the role of

nature. In classical games, rationality motivates players to choose their optimal strategies; whereas in evolutionary games, natural selection drives the biological evolution, functioning as the “agent of optimization.”

The evolutionary game consists of an inner game and an outer game. The inner game involves only ecological processes while the outer game involves evolutionary processes (Vincent & Brown, 2005; T. L. and T. L. S. Vincent, 2000). The inner game corresponds to Darwin’s second and third postulates—the struggle for existence and that heritable variation influences the struggle for existence. The outer game corresponds to Darwin’s first postulate of heritable variation (Vincent & Brown, 2005, p. 85; T. L. and T. L. S. Vincent, 2000, p. 22). Consequently, the evolutionary game model contains two types of time scales—ecological time, T_{ec} , and evolutionary time, T_{ev} . The ecological time scale is associated with the time for the population density to return to ecological equilibrium—population dynamics—while the evolutionary time scale is associated with the time for the strategies to return to a strategy equilibrium—strategy dynamics (Vincent & Brown, 2005, p. 119).

2.3 Behavioral Game Model

As Camerer has observed, “game theorists fell in love with the elegance of their model; it spoke to them and they thought that’s how people really behave....Over time, we’ve started to move away from a hyper-rational model to a more psychologically nuanced model” (as cited in Robinson, 2004, p.3). Indeed, “no-regret” decisions rarely happen to humans. Here we adopt Gintis’s notion (2008) of the beliefs, preferences, and constraints model that require only preference consistency (p. 2).

Again, payoffs are comparable. Therefore, we need to define a binary relation with a preference ordering $>_A$ on A with the following three properties (Gintis, 2008, p. 5):

1. Completeness: $x \succsim_A y$ or $y \succsim_A x$;
2. Transitivity: $x \succsim_A y$ and $y \succsim_A z$ imply $x \succsim_A z$;
3. Independence from Irrelevant Alternatives: For $x, y \in B$,
 $x \succsim_B y \Leftrightarrow x \succsim_A y, \forall x, y, z \in A$ and $\forall B$.

The axiom of independence from irrelevant alternatives implies that the preference between two alternatives does not depend on choice sets. Although it is subtle and controversial, this behavioral assumption means that choice sets do not need to be specified.

Belief is incorporated into the model because it logically stands between decision and payoff. Classical game theory ignores the current status quo of players, but the payoffs for players depend on their current personal states and strategic circumstances. Thus, it is more plausible to introduce a decision maker's current status quo into the theory, although behavioral experiments have shown that bounded rational agents systematically violate the expected utility theory. That phenomenon does not imply that agents have inconsistent preferences over the appropriate choice dimension, but rather that they have incorrect beliefs given strategic circumstances (Gintis, 2008, p. 3).

2.4 Remarks

Most literature on behavioral game theory has focused on the incorporation of psychology and sociology rather than on the ecological aspect. Human interactions are, in fact, much like biological interaction. The ecological process often depends on the abundance of some resource (Vincent & Brown, 2005, p. 30). The environment gives feedback to organisms influencing population growth and favoring adaptive traits. Similarly, the social environment gives feedback to individuals influencing human behaviors and favoring traits that will optimize fitness in such a society. Social selection, therefore, plays a role like natural selection

and drives social evolution. From the point of view of evolutionary game theory, a human behavioral game is made of an inner game and an outer game as well. The inner game refers to a game that is repeatedly played and reaches a particular equilibrium that forms the most adapted strategy at a certain period. The outer game refers to a game that is played over time and addresses the dynamics of the equilibrium in terms of the strategy frequencies. In social evolution, a novel strategy appears similar to a mutation in biological evolution. Equilibrium varies at different stages of history caused by limitations on sources and constantly changing strategic circumstances. The idea of an ecological and an evolutionary time scale works in the human behavioral context as well. Furthermore, a reasonable assumption about the application of these games to the human setting is that, in general, the evolutionary time scale is much slower than the ecological time scale; that is, most of the time, the dynamical social system will be near a slowing and changing ecological equilibrium solution. That assumption is consistent with the observation that “humans are much closer to time consistency, and have much longer time horizons than any other species” (Gintis, 2008, p. 12).

3 Rationality and Decision Making

Decision makers face bounded rationality when dealing with unique situations in the real world because of such limitations as response time, memory, available information, foresight, and reasoning. Many earlier, well-defined theories had flaws when applied to the development of behavioral science, but the discovery of the flaws represents great progress. Because human behavior is complex, various theories are necessary in distinct situations. We will look at decision making over time, risk and uncertainty first, and then further explore some other essentials that influence decision making.

3.1 Decision Making over Time

Individuals often have to deal with circumstances in which current decisions influence the choices available in the future. Also, an extended lag is typical between the time people make decisions and the time they experience the consequences of earlier decisions. For instance, people consider a 401(k) plan as a means to secure a stable retirement income. One has a small amount of money transferred from a current pay cycle to a monthly saving account. Although current utility may decline, future utility after retirement will potentially increase significantly. Alternatively, however, time inconsistency, which refers to people's inconsistent preferences over time, means that a person may sacrifice long-term payoffs for the sake of immediate payoffs. For example, a person who quits smoking will have better health, but because of the present urge (immediate payoff), keeps the smoking habit.

Several models are associated with time discounting. First is the exponential discounting model:

$$U(x) = x_0 + \delta x_1 + \delta^2 x_2 + \dots + \delta^T x_T = \sum_{t=0}^T \delta^t x_t,$$

where δ is the constant discounting factor between 0 and 1, the discount function $D(t) = \delta^t$, and x_t is the instantaneous payoff at period t . Although the exponential discounting model offers a nicely convergent function, the assumption of a constant discounting factor limits its strength because laboratory experiments suggest that the discount rate has a tendency to decline in the future (Streich & Levy, 2007, pp. 201-205).

A second model is the hyperbolic discounting model, which is more appealing because of its steep discounting rate in the near future and declined discounting rate in the distant future. As Diamond and Vartiainen (2007) have argued, "people...tend to exhibit short-run impatience and long-run patience" (p. 87). A generalized hyperbolic discount function is:

$$D(t) = 1 / (1 + \alpha t)^{\gamma/\alpha},$$

where $\alpha, \gamma > 0$, α determines “how much the function departs from constant discounting” (Loewenstein & Prelec, 1992, p. 580) and γ is a time preference parameter positively related to the instantaneous discount rate (Laibson et al., 1998, p. 100). The problem with a hyperbolic function is that many of them do not converge.

The third time discounting model is the quasi-hyperbolic discount model:

$$U(x) = x_0 + \beta\delta x_1 + \beta\delta^2 x_2 + \dots + \beta\delta^T x_T = x_0 + \sum_{t=1}^T \beta\delta^t x_t.$$

This model is similar to the exponential discount model after the present period. Therefore, the quasi-hyperbolic discount function is convergent, but fails to reflect the declining nature of the discount rate. Researchers have found that it roughly approximates observed behavior in laboratory experiments, especially for the first few periods (Streich & Levy, 2007, p. 211).

Gintis (2008) used the experiment conducted by Ainslie and Haslam (1992) as an example. Subjects could accept one of two offers, either \$10 on the day of the experiment or \$11 a week later. In the second round, the same subjects could accept one of two offers, either \$10 a year later or \$11 a year and a week later. Many of the subjects decided to take \$10 right away and \$11 in a year and a week (Gintis, 2008, p. 9). Let x be to get \$10 at time t and y be to get \$11 at time $t + 7$, where t is in days. Thus we have $x > y$ when $t = 0$ and $x < y$ when $t = 365$. However, these two conditions cannot be true at the same time. Gintis suggests a way to make the time inconsistency disappear by moving the decisions up one more dimension. For example, let x_0 mean \$10 right away and x_{365} mean \$10 in a year from the experimental day, and similarly for y_7 and y_{372} . Then there is no conflict between $x_0 > y_7$ and $x_{365} < y_{372}$ (Gintis, 2008, p. 10).

In fact, when we take time-dependent preference into consideration, players are merely maximizing their utilities derived from consistent preference. Following one common hyperbolic discounting function,

$u(z_t) = z_t/t + 1$, where z_t is the amount of money and t is time in days. Thus, $u(z_0) = 10/(0+1) = 10$ and $u(z_7) = 11/(7+1) = 1.375$, so $u(z_0) > u(z_7)$ and $u(z_{365}) = 10/(365+1) = 0.027$ and $u(z_{372}) = 11/(372+1) = 0.029$, so $u(z_{372}) > u(z_{365})$.

3.2 Decision Making over Risk and Uncertainty

Humans are rarely certain about things in the real life. For example, patients often cannot describe symptoms exactly; doctors and nurses cannot state observations perfectly, laboratory reports always contain some degree of error, physiologists lack a complete understanding of the human body, pharmacologists have no complete understanding of the mechanisms concerning the effectiveness of drugs, and no one can precisely determine one's prognosis (Szolovits, 1995, p. 111). Despite the uncertainties, doctors still have to recommend appropriate treatments, and patients still need to decide whether to follow doctors' recommendations.

Uncertainty typically involves exogenous and endogenous aspects. The former is resolved randomly by nature, and the latter is attributed to some other decision makers (Muthoo, 1999, p. 1). The general approach to explain how people make decisions under uncertainty with exogenous variables tends to rely on utility theory pioneered by von Neumann and Morgenstern, an approach employed in classical game theory. The theory and its axioms (see section 2.1) assume that the probabilities associated with each state are known to players. Players, in turn, do not have to form any beliefs concerning the distribution of the states of nature (Muthoo, 1999, p.4). Because of ignorance about beliefs, expected utility theory fails when individuals observe the states of nature differently from the given objective probabilities. Consider the Allais paradox as an example:

There is a two-choice situation in a game with prizes $x = \$2,500,000$, $y = \$500,000$, and $z = \$0$. The first is a choice between lotteries $\pi = y$ and $\pi' = 0.1x + 0.89y + 0.01z$.

The second is a choice between $\rho = 0.11y + 0.89z$ and $\rho' = 0.1x + 0.9z$. Most people, when faced with these two choice situations, choose $\pi > \pi'$ and $\rho' > \rho$ (Gintis, 2008, p. 17).

Based on the expected utility function, however, $u(\pi) = u(y)$, $u(\pi') = 0.1u(x) + 0.89u(y) + 0.01u(z)$, $u(\rho) = 0.11u(y) + 0.89u(z)$, and $u(\rho') = 0.1u(x) + 0.9u(z)$. Consequently, $u(y) > 0.1u(x) + 0.89u(y) + 0.01u(z)$, which implies $0.11u(y) > 0.1u(x) + 0.01u(z)$, so $0.11u(y) + 0.89u(z) > 0.1u(x) + 0.9u(z)$, which means $u(\rho) > u(\rho')$. Players' beliefs towards utilities of lotteries are derived from a four-fold pattern of risk attitudes, namely "risk seeking for low-probability gains and high-probability losses, coupled with risk aversion for high-probability gains and low-probability losses" (Fox & See, 2003, p. 279). The fact that people tend to choose $\pi > \pi'$ and $\rho' > \rho$ most likely relates to risk aversion. One approach to cope with the inconsistent weighted probabilities is a weighted expected utility function developed by Chew and MacCrimmon:

$$\frac{\sum_{i=1}^n v(x_i) p_i}{\sum_{i=1}^n \tau(x_i) p_i}$$

where $v(x_i)$ is the evaluation function, $\tau(x_i)$ is a weighting function, and p_i is the probability of observing outcome x_i (Tuthill & Frechette, 2002; Machina, 2004). Using the Allais paradox as an example, the curves of indifference below are generated by three possible prizes, $z < y < x$, with corresponding probabilities, p_1, p_2, p_3 , respectively. As $p_2 = 1 - p_1 - p_3$, all the prospects $(z, p_1; y, p_2; x, p_3)$ can be represented by the unit triangle in the (p_1, p_3) -plane. Under expected utility, indifference curves are linear and parallel; other the other hand, under weighted utility, indifference curves are linear as well, but not necessarily parallel, because curves become steeper as the probability of prize x rises and the probability of prize z falls (Quiggin, 1993, p. 39).

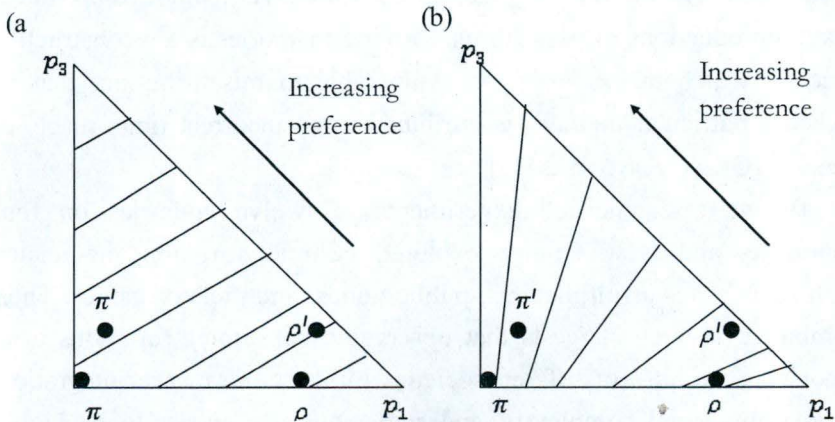


Figure 1: Indifference curves generated by expected utility (a) and weighted utility (b)

From the indifference curves, the expected utility predicts that $u(\pi') > u(\pi)$ and $u(\rho') > u(\rho)$, but weighted utility predicts that $u(\pi) > u(\pi')$ and $u(\rho') > u(\rho)$, which is consistent with the experimental observation.

3.3 Limitations of Reasoning Capacity

Given the complexity of human behavior, many factors affect decision making and include limited memory, cultural differences, different abilities, and limited response time. Memory also has a boundary or limit, both short-term and long-term; otherwise casinos would presumably face bankruptcy if gamblers were capable of counting down all the cards in blackjack. Memory limitations appear the most when players need to carry out successive actions as well as forecasting. In addition, memory involves personal beliefs that influence the way humans observe and convey information. Rubinstein (1998) claims that “[m]emory is a special type of knowledge....Imperfect recall is a particular case of imperfection of knowledge that lies at the heart of human processing of information” (p. 63). Memories are not only lost through the passage of time and the learning

of new information, but they also get distorted. As memories are never exact reproductions of past events, forming memories is a reconstructive process, which makes memories vulnerable to misattribution; that is, “when a particular memory is attributed to an incorrect time, place, or person” (Okado & Stark, 2003).

Twelve researcher-led experiments in twelve countries on four continents and New Guinea explored cultural variations associated with such issues as ultimatums, public goods, and dictator games. Their combined research suggests that observable behavioral variations exist among the equilibria of different societies. Furthermore, market integration, anonymity, social complexity, and settlement size appear to be highly correlated across groups (Henrich, et al., 2005). Social behavior tends to be acquired through cultural learning and is much like evolutionary games in which the standards of fitness for organisms are shaped by nature. Consequently, individuals bring the preferences and beliefs that they have developed within particular social environments into the experimental situations.

With distinct knowledge and skills in the background, individuals are likely to have varied levels of information processing. Additionally, a specific response time will also limit an individual’s information processing abilities. As a result, players may not want to investigate the overwhelming information in certain strategic circumstances. Instead, players would rather maintain their status quos, imitate successful agents whom they encounter, or adopt the recommended strategies of social norms.

3.4 Summary

The essentials above are by no means exhaustive; they merely help illustrate how and why decisions are influenced. Decision theory and relevant theories are largely employed in single (one-shot) games, which

do not involve learning mechanisms. Unlike single games, repeated or evolutionary games do not emphasize individual strategies or decisions, as the equilibrium gets translated into population density or frequency of strategies, respectively. The beauty contest game represents a useful example (see introduction). Based on the experiment conducted by Ho, Camerer, and Weigelt, during the first round, the choices are “widely distributed and far from equilibrium” (Ho, et al., 1998), and the majority of the choices are around 21-40, which are about 1-3 levels of iterated rationality (Camerer, 2003, p. 18). But “choices converge toward the equilibrium point over time” (Ho, et al., 1998). As the players continue with the games, they observe the payoffs and adapt to the rules. And hence individual beliefs do not influence the strategies or decisions as strongly in long-run games; instead, “social norms” determine how reasonably rational players should behave.

4 Inner and Outer Games of Social Evolution

Individual interactions in repeated games are a learning process that constitutes the inner game of social evolution. The environment can be stationary or non-stationary in the inner game, whereas the environment should be dynamic in the outer game. In the inner game, equilibrium can be transformed into population dynamics, consisting of groups of individuals who adopt the same strategies, and population density. In the outer game, equilibrium can be transformed into strategy dynamics, or strategy frequency.

4.1 Inner Game

To study the inner game, economists have applied several learning mechanisms to the repeated games. In the reinforcement learning model, players associate payoffs with strategies according to experience and

translate those payoffs into the probabilities of adopting those strategies in the future (Bell, 2001, p. 89). Economists find that reinforcement learning not only explains the existing equilibrium concept in game theory, but also provides an equilibrium selection technique in the presence of multiple equilibriums (Bell, 2001, p. 89). Models of learning explain the behaviors of players to some extent, but the models do not address population dynamics, the key feature of repeated games.

The primary tools in the study of population dynamics are the replicator equations that predict the distribution of certain genes or organisms at any given time in a particular environment (Gintis, 2000, p. 189). Under a structured pattern and featured environment, some replicators will have a better chance of survival, and those strategies will reproduce at an appropriately faster rate. The generally adopted replicator equation is

$$\dot{x} = [u(e^i, x) - u(x, x)]x_i, \text{ where } u(x, x) = \sum_{i=1}^k x_i u(e_i, x).$$

The proportion of population that employs the pure strategy i at time t , is represented by the expression $x_i(t) = p_i(t)/p(t)$; the fitness of pure strategy i , is $u(e^i, x)$; and the population average payoff is $u(x, x)$ (Weibull, 1995, p. 72).

Human cultural evolution, however, has a less direct relationship to the pattern of replicators. Therefore, one assumption regarding cultural evolution is that individuals imitate the behaviors from other people; that is, culture changes by “transmission from others” (Gintis, 2000, p. 217). We can divide the people who are imitated into three groups: “parents (vertical transmission), peers (horizontal transmission), and influential individuals and institutions (oblique transmission)” (Gintis, 2000, p. 217). To modify the dynamic, evolutionary model for the social context, two new elements need to be added to the replicator equation, time rate and choice probability (Weibull, 1995, p. 152). Time rate, $r_i(x)$, is the average rate at which each individual reviews a strategy choice i . Choice probability,

$p_i^j(x)$, is the probability that each individual with strategy i will change to some other pure strategy j . Both of the elements are determined by the current performance of possible strategies and the current population state (Weibull, 1995, p. 152). Consequently, population dynamics for replication by imitation becomes:

$$\dot{x}_i = \sum_{j \in K} x_j r_j(x) p_j^i(x) - r_i(x) x_i$$

The inflow to the subpopulation i is $\sum_{j \neq i} x_j r_j(x) p_j^i(x)$, the outflow from subpopulation i is $\sum_{j \in K} x_i r_i(x) p_i^j(x)$, and the aggregate review times in the subpopulation i is $\sum_{j \in K} x_i r_i(x) p_i^j(x) = r_i(x) x_i$ (Weibull, 1995, pp. 152-153).

For example, in the case of considerate smoking behavior studied by Nyborg and Rege, the environment of the inner game could be stationary or non-stationary depending on whether the smoking policy, which is the driven power, is changing over time. If the environment is stationary, players will review their strategies regularly. If, on the other hand, the environment is non-stationary, individuals would want to review their strategies each time the policy is revised and include regular reevaluations of their strategies regardless of the policy modifications. Both the reviewing rate and probability of switching strategies are determined by the current environment and the current approval level of non-considerate smoking behavior.

4.2 Outer Game

The outer game of social evolution is much like biological evolution. According to Darwin, "one cannot explain the evolution of man and social faculties without a reference to natural selection and struggle for life"

(Marciano, 2007, p. 13). Both biological evolution and social or cultural evolution can be described as processes “of continuous adaptation to [unforeseeable] events, to contingent circumstances which could not have been forecast” (Hayek, 1988, p. 25; Marciano, 2007). Although social or cultural evolution can hardly be predicted, human behavior tends to fall into certain patterns. Many social conventions have two features of interest: “self-enforcing behavioral regularities” and conformity without thought to entrenched social structures (Epstein, 2001, p. 9). The general replicator equation or the modified version for replication, however, does not stress strategy dynamics, the fundamental characteristic of evolution. Therefore, we should adopt a new framework. Of the limited frameworks available, one is the G-function developed by Vincent and Brown. Although their approach is still controversial in the field of biological evolutionary games and is not widely adopted, the G-function provides relatively simple and generalized tools. The advantage of a G-function is that it could be used for a single population with multiple stages, or multiple populations with interactions (Vincent and Brown, 2005, p. 89).

A function $G(v, \mathbf{u}, \mathbf{x})$ is a fitness generating function (G-function) for population dynamics if and only if $G(v, \mathbf{u}, \mathbf{x})|_{v=u_i} = H_i(\mathbf{u}, \mathbf{x})$, $i = 1, \dots, n_s$, where $H_i(\mathbf{u}, \mathbf{x})$ defines the fitness function determined by strategies ($\mathbf{u}$), population density ($\mathbf{x}$), and the number of possible strategies within the population n_s (Vincent and Brown, 2005, p. 77). Difference equations describe the population dynamics, while differential equations describe the continuous population dynamics (Vincent and Brown, 2005, pp. 34–38).

For populations with a single scalar strategy, population densities and strategies are represented by vectors $\mathbf{x} = [x_1 \cdots x_{n_s}]$ and $\mathbf{u} = [u_1 \cdots u_{n_s}]$. Additionally, the expression for population dynamics for G-functions is represented by $x_i(t + 1) = x_i[1 + G(v, \mathbf{u}, \mathbf{x})|_{v=u_i}]$ for discrete games;

and by $\dot{x}_i = x_i G(v, \mathbf{u}, \mathbf{x})|_{v=u_i}$ for continuous games, where $i = 1, \dots, n_s$. In this case, the behavior of each population group must be dependent on the same “evolving trait” (Vincent and Brown, 2005, pp. 92-93). For example, if the number of enrollments in graduate schools entirely depends on the availability of jobs in the current market, then that parameter can be considered as the evolving trait in the behavioral model for graduate school enrollments.

For populations with vector strategies, population densities and the vector strategy of a population x_i are represented by vectors $\mathbf{x} = [x_1 \cdots x_{n_s}]$ and $\mathbf{u}_i = [u_{i1} \cdots u_{in_u}]$, where n_u is the number of “traits” in the vector $\mathbf{u}_i$. Moreover, population dynamics for G-functions are $x_i(t+1) = x_i[1 + G(v, \mathbf{u}, \mathbf{x})|_{v=u_i}]$ for discrete games and $\dot{x}_i = x_i G(v, \mathbf{u}, \mathbf{x})|_{v=u_i}$ for continuous games, where $i = 1, \dots, n_s$. In this case, behavior of each population group can be determined by multiple “evolving traits” (Vincent and Brown, 2005, pp. 93-95). For example, if the number of enrollments in graduate schools depends on the job availability in the current market, the number of enrollments in undergraduate schools, and the number of programs in average graduate schools, then these three parameters could make up the vector strategies in the behavioral model for graduate school enrollments.

In a behavioral model, if the dynamic of resources is explicitly indicated, then the resource vector $\mathbf{y} = [y_1 \cdots y_{n_y}]$, where n_y is the number of resources, needs to be included in the G-functions. Thus, the expression for population dynamics becomes $x_i(t+1) = x_i[1 + G(v, \mathbf{u}, \mathbf{x}, \mathbf{y})|_{v=u_i}]$ for discrete games and $\dot{x}_i = x_i G(v, \mathbf{u}, \mathbf{x}, \mathbf{y})|_{v=u_i}$ for continuous games, where $i = 1, \dots, n_s$. The dynamics equations for resource vector $\mathbf{y}$, in dimension n_y , are expressed by resource function $\mathbf{N}(\mathbf{u}, \mathbf{x}, \mathbf{y})$ and defined as $\dot{\mathbf{y}}(t+1) = \mathbf{y} + \mathbf{N}(\mathbf{u}, \mathbf{x}, \mathbf{y})$ for discrete games and $\dot{\mathbf{y}} = \mathbf{N}(\mathbf{u}, \mathbf{x}, \mathbf{y})$ for continuous games (Vincent and Brown, 2005, pp. 96-97).

The complexity of the social context can create a highly complicated G-function. For instance, if not all individuals are evolutionarily identical, we will need to introduce multiple G-functions. Besides the G-function approach, other methods, such as adaptive dynamics, are available for evolutionary games. Unfortunately, none of the methods has been universally adopted. The study of a theoretic-game model for evolutionary games is still in progress, in particular, the idea of applying game models to behavioral evolution. The field, therefore, offers many prospects for future study.

5 Conclusion

Behavioral game theory is still in its preliminary developmental stage; the framework is not yet rigorously established. The psychological aspect of behavioral games has been studied by means of the combination of game-theoretic models and empirical results. A variety of mathematical applications are employed under certain circumstances in one-shot games, but the “real situations” are hard to capture because there are still unknown elements that cause the results to diverge from empirical outcomes. Also, researchers have applied replicator equations to social contexts without formally categorizing the games as evolutionary inner or outer games. The connection between social evolution and biological evolution is widely observed. Economists and biologists have been improving the framework of evolutionary game theory for biological evolution, and thus it may enhance the study of social evolution. To further develop behavioral game theory, game theorists will need to work closely with neuroeconomists, sociologists and psychologists.

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A Quantitative Genetics Study of *Agalychnis callidryas*

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Abstract

Mate choice is based on a combination of traits that may include body size, calls, and territory quality. In Belizean red-eyed treefrog populations, *Agalychnis callidryas*, large males have a mating advantage and they sire larger tadpoles. To determine whether similar conditions exist in other *A. callidryas* populations, we manipulated controlled matings and quantified the resulting offspring. General research objectives were: 1) to determine if a large-male mating advantage exists in Panamanian populations and 2) to investigate maternal and paternal effects on egg clutches and the growth and development of tadpoles. Each female was paired with two males and each male with two females to obtain tadpoles from half-sibships. Individual tadpoles were raised to metamorphosis in cages suspended in the pond. We analyzed maternal and paternal effects on larval performance and growth rate. Amplectant males were significantly larger than non-amplectant males suggesting female preference for large males. Maternal effects were present in the early stages of offspring development in the

form of a female size-fecundity relationship, while paternal effects were evident in later stages of tadpole growth and development.

Introduction

Sexual selection, one of the driving forces of natural selection, also drives the microevolutionary process towards specific genetic traits (Mitchell 1990). Sexual selection can generally be broken down into two categories: intrasexual selection and intersexual selection. Intrasexual selection involves males that compete with each other using weapons such as claws, fangs, or large body size to gain an advantage or access to females. Intersexual selection involves females choosing males based on characteristics such as body size, access to resources, or ornaments (Berven 1981; Andersson 1986). When the female chooses males that do not give her a direct benefit, such as resources or protection, the reasons for her choice of that specific male are less clear (Mitchell 1990; Sheldon et al. 1997; Welch 2003). One hypothesis seeks to explore whether females benefit when they select mates based on characteristics such as ornaments or size. This “good-genes hypothesis” suggests that females select males whose phenotypic characteristics are indicators of genetic quality. The female indirectly benefits because the increased genetic quality and fitness of the males can be passed to offspring and ensure higher survival rates or superior larval performance (Andersson 1986; Woodward et al. 1988; Mitchell 1990; Howard et al. 1994; Welch 2003).

Anurans exhibit a wide variety of mating preferences and are therefore excellent models for testing the good-genes hypothesis. In many anuran species, there is a large-male mating advantage (Berven 1981; Howard et al. 1994; Tárano & Herrera 2003; Benard 2007; Briggs 2008). Moreover, large males sire large tadpoles (Mitchell 1990; Altwegg & Reyer 2003; Briggs unpubl.), and large metamorphs have an increased chance of

survival (Travis et al. 1987; Mitchell 1990; Altwegg & Reyer 2003; Welch 2003). Also, previous studies show that large male size positively correlates with large metamorph size, a factor that may increase fecundity and the chances of successfully finding a mate (Berven 1987; Travis et al. 1987; Altwegg & Reyer 2003). Females may choose larger mates because large size may indicate more experience, a higher fertilization rate, more access to resources, and an overall increase in survival rate and fitness (Berven 1981; Briggs 2008).

Red-eyed treefrogs, *Agalychnis callidryas*, are hylids that exhibit non-random mating (Briggs 2008). Studies in Belize have found that a large-male mating advantage exists along with little to no male-male competition (Briggs 2008), and that large males sire larger hatchlings and metamorphs (Briggs unpubl.). This project tests the good-genes hypothesis and whether a large-male mating advantage exists in Panamanian populations. We test the effects of a potential female preference for large male size on tadpole growth and development. Measures of egg yolk diameter determine how much energy each female invested in her eggs and help to determine the maternal effects on tadpoles. Testing for paternal effects on tadpoles involved calculating offspring performance between large and small males. The study also compared hatching success and the growth rates and development of the tadpoles.

Methods

Study Organism

Red-eyed treefrogs, *Agalychnis callidryas*, are Neotropical hylids with a habitat ranging from Mexico to western Ecuador (Briggs 2008). An arboreal and nocturnal species, *A. callidryas* are prolonged breeders (Donnelly & Guyer 1994) that become active during the rainy season, which typically lasts from May to December (Warkentin 1999). Males aggregate

around ponds and call to females at the onset of the season (Briggs 2008). Females are larger than males (see results) and typically lay around two hundred eggs in two to three egg clutches in one night. After females lay their eggs, they are not ready to mate again for the following two months. The clutches are oviposited on the underside of leaves that overhang standing pools of water or temporary ponds (D'Orgeix & Turner 1995; Briggs 2008). Tadpoles hatch within six days and reach metamorphosis in two to three months (Warkentin 1999).

Study Site

Research was conducted at the Smithsonian Tropical Research Institute in Gamboa, Panama. The station is located in lowland tropical rainforest on the bank of the Panama Canal and Chagres River, thirty kilometers north of Panama City (Smithsonian Tropical Research Institute). All *Agalychnis callidryas* used in this study were collected and observed at Experimental Pond, Gamboa.

Experimental Design

A half-sibling design was used to test maternal and paternal effects on tadpoles. Twenty *A. callidryas* females and 19 males were collected during the month of July between 21:00 and 1:00. Fourteen amplexant pairs, six gravid females and five lone males were collected. Individuals were paired at random in the laboratory. Each female was paired with two males and each male with two females, making 40 crosses. The pairs were housed in 3-gallon plastic containers with approximately 3 mm of water to allow each female to refill her bladder while laying clutches. Pairs were checked after one hour using a red light filter to minimize disturbance. Once a sub-clutch was oviposited and the female lowered to the water to refill her bladder, the male was removed and replaced with another male.

The following morning, the mass of adult *A. callidryas* was measured

using a Pesola micro-line spring scale, and snout-vent length (SVL) was measured using dial plastic calipers. Eggs of each sub-clutch were counted and then transferred to leaves and placed in cups containing aged tap water. Eggs were misted regularly to prevent desiccation. Ten eggs per sub-clutch were haphazardly chosen and ovum diameter was measured at 8X magnification using a Zeiss Stemi DV4 microscope. Those measurements were the basis for calculating average ovum diameter per female and per pair.

Once each tadpole in a clutch hatched, they were introduced to the pond before they began feeding (1-3 d post-hatching). Tadpoles were individually raised in 4.5 L mesh cages in the pond ($N = 396$). There were ten replicates per sib-ship. The tadpoles were allowed to develop naturally in their cages until metamorphosis. Tadpoles were exposed to the same variables (water temperature, depth, and climate) and fed on phytoplankton that filtered through the cages. To measure growth rate and development, tadpoles were taken out of the pond, photographed using a Nikon D40 digital camera, and SVL and total length were measured every three weeks using NIH ImageJ software. To determine their age, each tadpole was staged using the Gosner (1960) developmental stage.

Results

Size of Males

The mean mass of males was 3.40 ± 0.39 g and mean SVL of males was 44.78 ± 1.78 mm ($N = 235$). The data revealed a strong positive correlation between male mass and SVL (Pearson's rank correlation: $r = 0.602$, $N = 235$, $P < 0.001$). Mean mass of non-amplectant males was 3.39 ± 0.40 g and mean SVL was 44.61 ± 1.85 mm ($N = 158$). Mean mass of amplectant males was 3.41 ± 0.39 g and mean SVL was 45.13 ± 1.57 mm ($N = 77$). Amplectant males were significantly larger than non-amplectant males

based on SVL ($F = 5.56$, $df = 233$, $P = 0.019$) but not based on mass ($F = 0.01$, $df = 233$, $P = 0.912$). Males were conservatively categorized into two categories: larger than the average SVL and smaller than the average SVL. Using a paired t-test we found that the SVL of categorical large males was significantly larger than that of small males ($t = 3.12$, $df = 17$, $P = 0.006$).

Size of Females

Mean mass of females was 7.66 ± 1.03 g and mean SVL was 57.50 ± 2.72 mm ($N = 230$). There was a strong positive correlation between female mass and SVL (Pearson's rank correlation: $r = 0.623$, $N = 230$, $P < 0.001$).

Maternal Effects and Investment

The data revealed a relationship between female SVL and the number of eggs (Pearson's rank correlation: $r = 0.239$, $N = 88$, $P = 0.025$; Figure 1) as well as a relationship between female mass and the number of eggs (Pearson's rank correlation: $r = 0.238$, $N = 76$, $P = 0.038$), indicating a female size-fecundity ratio. Larger females produced more eggs.

The mean ovum diameter per female was 2.54 ± 0.43 mm, and the mean ovum diameter per pair was 2.55 ± 0.45 mm. To investigate whether ovum diameter differed among females or among pairs, a Chi square test showed that no significant difference existed among females or pairs (females: $\chi^2 = 41.74$, $df = 56$; pairs, $P = 0.922$; $\chi^2 = 62.22$, $df = 57$, $P = 0.296$). A one-way ANOVA tested whether the first and second clutch differed in ovum diameter, and revealed no statistical difference between the two clutches ($F = 2.45$, $df = 1378$, $P = 0.870$).

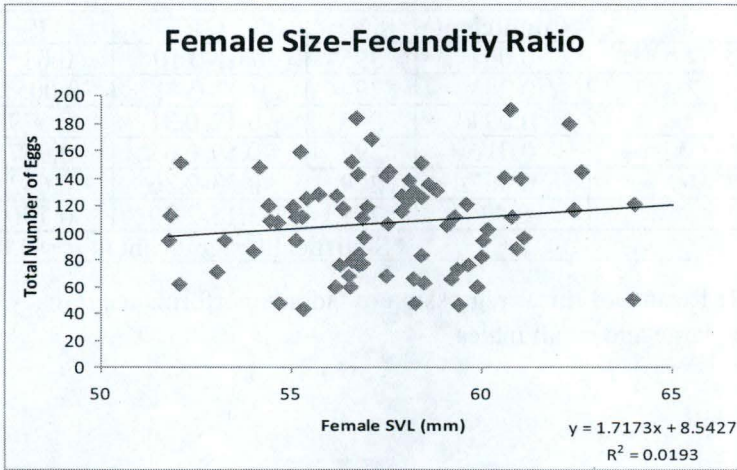


Figure 1: Results of Pearson's correlation of female size-fecundity relationship.

Paternal Effects

Calculating the ratio of the number of hatchlings to the number of eggs oviposited in each clutch determined the rate of hatching success and allowed comparisons between males. A paired t-test showed that no significant difference in hatching success existed between males ($t = 1.11$, $df = 54$, $P = 0.270$).

Linear regression tested for relationships between the total length and SVL of tadpoles and male size at three points: the hatchling stage, three weeks post-hatching, and six weeks post-hatching (Table 1). Hatchlings of small males had a 0.05 mm increase in size when compared with hatchlings of large males (95% CI: 0.005-0.102, $P = 0.030$, Table 1).

Trait	Coefficient	N	CI	P
Hatchling SVL	0.054	395	0.01-0.10	0.03*
Hatchling total	0.243	394	0.07-0.41	0.005*
SVL wk 3	0.094	297	-0.12-0.31	0.379
Total wk 3	0.016	297	-0.59-0.62	0.957
SVL wk 6	0.067	279	-0.23-0.36	0.652
Total wk 6	-0.430	281	-3.15-2.29	0.756
*Statistically significant at $P < 0.05$				

Table 1: Results of linear regression of tadpole performance traits between large and small males

Discussion

Our data show that non-random mating exists in this Panamanian *Agalychnis callidryas* population because there is evidence for a large-male mating advantage. Amplectant males were larger than non-amplectant males. Although males do compete with each other in Panamanian populations, we hypothesize that there is still opportunity for female choice. Our findings are consistent with the findings of studies focused on other anuran species (Berven 1981; Howard et al. 1994; Tárano & Herrera 2003; Benard 2007).

An exploration of maternal effects in this study was limited to female yolk investment, but data revealed no differences in ovum diameter among females and among pairs. Larger females, however, have an advantage over smaller females because they are more fertile and oviposit more eggs. We focus on potential paternal effects later in tadpole development. Previous studies in anurans have shown that maternal effects are visible during pre-hatchling development (Crump & Kaplan 1979; Kaplan 1989) and tend to decrease with further development. Studies also show that effects of dam and sire may affect different stages of offspring development (Bonduriansky & Head 2007).

The data revealed no significant difference in hatching success between large and small males. In the current study, the eggs developed in the laboratory instead of being exposed to natural conditions. Therefore, all eggs were exposed to the same amount of moisture and light and were protected from predation and climatic factors. Although we did not observe a difference in hatching success, it is possible that if the eggs were exposed to natural conditions, the hatching success would differ between large and small males because of differences in quality.

We found that hatchlings from small males were larger than hatchlings from large males. Although many studies have shown that larger hatchling size is beneficial, small hatchling size does not always mean that the hatchlings are less fit or have a disadvantage. Studies on the common frog, *Rana temporaria*, Laurila & Kujasalo, suggest that anurans exhibit phenotypic plasticity during metamorphosis in response to environmental conditions such as desiccation and predation. The authors conclude that although predator cues in the pond delay tadpole development, they metamorphose later but at a larger size (1999). Further analysis needs to be done on our data to find out whether small hatchling size is advantageous later in development and at metamorphosis.

Results showed no difference between half-siblings at week three and week six measurements, but this may be due to the fact that the tadpoles developed at different individual rates in the pond. Therefore, tadpole length may no longer be an accurate determinant of a tadpole's "age." During the complex life cycle of anurans, tadpoles start out very small, grow into fairly large metamorphs, and then their length is reduced when they become froglets as they resorb their tails (Gosner 1960). Therefore, it is possible that a smaller metamorph may have actually been farther along in development than a larger metamorph if it was closer to becoming a froglet and had begun to resorb its tail. This indicates that further analysis

needs to be done to compare the size of the froglets when they emerged from the pond. The size of the froglet will more accurately determine whether the paternal effects were significant and whether female choice for large males supports the good-genes hypothesis for enhanced offspring performance.

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Homeland Insecurities: A Critical Policy Analysis of the *Animal Enterprise Terrorism Act* of 2006

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Introduction

Before the miasma of dust and debris lifted from the ruins of the World Trade Center and the Pentagon after the September 11, 2001, terrorist attacks orchestrated by Al-Qaeda, America's leaders were quickly enacting a new generation of counterterrorism laws and national security apparatuses meant to safeguard the country from additional attacks. The Bush Administration, buttressed by a wave of public support and a legislative mandate, pushed through an aggressive counterterrorism agenda creating the Department of Homeland Security and passing the controversial *Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001* (USA PATRIOT Act).¹ This mandate continued for several years, helped lead to war in Iraq in March 2003, and allowed the expansion of the federal government's eavesdropping powers with the *FISA Amendments Act of 2008*, a revision of the post-Watergate *Foreign Intelligence Surveillance Act of 1978* (FISA).²

The media and the academic and legal communities have explored the narratives of those acts, but less scrutiny has focused on the ways the post 9/11 environment is shaping domestic counterterrorism legislation aimed directly at the very citizens it seeks to protect. One example of domestically focused legislation is the *Animal Enterprise Terrorism Act*

of 2006 (AETA),³ an amendment to the *Animal Enterprise Protection Act of 1992* (AEPA).⁴ The newer act extends the protections of the AEPA to tertiary enterprises and affiliated individuals conducting business with animal enterprises. Further, the AETA reclassifies certain crimes committed against animal enterprises as federal crimes of terrorism with sanctions mostly contingent on the amount of economic damages incurred.

Passed in the waning days of the 109th Congress before Democrats assumed control of both houses, the law is unique because it focuses exclusively on American citizens and because it brings the commission of non-violent property crimes and other low-level offenses under the banner of terrorist acts. Also, the law specifically targets the animal rights movement and, despite being characterized as a mere amendment, drastically alters and leaves the original act virtually unrecognizable. Despite these major modifications, Congress treated the AETA as non-controversial legislation, allowing it virtually to sail through both the committee process and through the limited floor debate. A critical analysis of this seemingly innocuous, but far-reaching act is an important first step to open a dialogue regarding this little known yet quite controversial law.

Background

The *Animal Enterprise Terrorism Act of 2006* was proposed in order to address what proponents argued were weaknesses and insufficiencies in the *Animal Enterprise Protection Act of 1992*. The original act afforded protections to animal enterprises exclusively and required that a tangible “physical disruption” to the animal enterprise be demonstrated. Using the Interstate Commerce Clause of the U.S. Constitution, Congress proscribed actions that intentionally caused a “physical disruption to the functioning of an animal enterprise by intentionally stealing, damaging, or causing the loss of any property (including animals or records) used by an animal

enterprise, and thereby causes economic damages exceeding \$10,000 to that enterprise or conspir[ing] to do so.” The act set a penitentiary term of one year plus payment of restitution for anyone convicted of an AETA-defined crime. The act also stipulated that if the defendant caused serious bodily injury or death to an individual, it would be treated as an “aggravated” offense.⁵

By adding the clause defining an “aggravated offense,” Congress addressed changes in tactics of radical animal rights groups such as the Animal Liberation Front (ALF) and Stop Huntingdon Animal Cruelty (SHAC). Those groups had tailored their campaigns to bypass the restrictions of the earlier AEPA. Rather than focus their efforts on an animal enterprise directly, activists began targeting employees of tertiary or peripheral enterprises that conduct business with the animal enterprise such as banks, suppliers, pharmaceutical companies, universities, and insurers. The groups used a wide range of tactics including vandalism, threats, harassments, property destruction, fraud, identity theft, and even bomb threats and deployments of improvised explosive devices (IED).⁶

In testimony presented in May 2004 before the Senate Judiciary Committee hearing “Animal Rights: Activism vs. Criminality,” California District Attorney McGregor Scott cited an FBI report that attributed over 1,000 “acts of terrorism” and \$100 million in losses since 1996 to animal rights and ecological activists.⁷ During a Senate hearing in 2005 on “special interest extremist groups,” John Lewis, Deputy Assistant Director of the FBI, stated that although no death or serious injury could be attributed to radical environmental and animal rights groups, they represented “one of the most serious domestic terrorism threats” facing the nation.⁸

Witness testimony presented at the Senate hearing revealed a coordinated campaign of “terror” unleashed by animal rights activists on these tertiary targets. One prominent example focused on Stop Huntingdon

Animal Cruelty (SHAC) and its campaign against Huntingdon Life Sciences (HLS). The campaign was partly inspired by an undercover video put out by People for the Ethical Treatment of Animals (PETA) showing HLS employees physically and verbally abusing beagles used for research. The video later led to the dismissal and convictions of several HLS employees⁹ and a civil suit that HLS filed against PETA but later settled out of court.¹⁰

Originally started in the U.K., the campaign against HLS migrated to the U.S. with the establishment of SHAC USA, and began aggressively to target tertiary companies to induce them to sever their business relationship with HLS. William Green, Senior Vice President of Chiron Corporation, a biotechnology firm headquartered in Emeryville, California, gave testimony about SHAC's campaign against employees of Chiron. Green testified to the committee about several specific tactics, often called "direct actions," deployed against employees of Chiron. Included in the list of tactics were "home visits," for which a group of activists assembled outside of the employee's home, shouted obscenities, rattled doors and windows, harassed neighbors and family members (including children), and distributed leaflets alleging that the targeted employee abused animals. Other tactics included fraudulent subscriptions to magazines in the targeted person's name, phone harassment, and the posting of personal information about employees, including home addresses, on the internet to encourage other activists to target them. Green also testified that employees of Chiron had been victims of numerous property crimes such as vandalism and property damage ranging from spray-painted messages such as "puppy killer" on a target's home to sprays of corrosive acids on their vehicles. He testified that two pipe bombs had been detonated at Chiron's California headquarters, shattering the glass entrance, and alleged that activists had begun to make similar bomb threats against individual employees.

He implored the committee to pass legislation to help protect Chiron and other tertiary targets.¹¹

In spite of its alleged weaknesses, the AEPA was successfully invoked to secure the convictions of six members of SHAC USA on March 3, 2006. The six co-defendants were convicted by a federal jury in New Jersey of conspiracy to violate the AEPA and several counts of interstate stalking and harassment. The jury found that, although none of the defendants themselves had been shown to have participated directly in crimes against HLS, the group's website had served to incite acts of violence against associates of HLS by posting their names and addresses on the website and by boasting about successful "direct actions," often using the word "we." Collectively, the six co-defendants were sentenced to over 23 years in prison.¹²

Although the convictions were a rebuke to the animal rights groups, representatives and lobbyists of biomedical technology firms, pharmaceutical enterprises and research universities still actively lobbied Congress to clamp down on radical animal and environmental activists. Those pressing for firmer action found a friend in the American Legislative Exchange Council (ALEC). ALEC advertises itself as a nonpartisan, conservative think tank with membership drawn from members of state legislatures and "over 300 corporate and private foundation members."¹³ It boasts that it "provides its public and private sector members a unique opportunity to work together to develop policies and programs that promote the organization's mission." That mission focuses on introducing and promoting legislation at the state level that promotes "free markets, limited government, and federalism,"¹⁴ but ALEC has been involved with promoting several pieces of federal legislation as well.

One attempt at federal legislation was a model bill, titled the *Animal and Ecological Terrorism Act*, that ALEC wrote after issuing a report

similarly titled *Animal and Ecological Terrorism in America*. The ALEC report denounced the increasingly aggressive threats and escalating costs on enterprises targeted by animal and ecological “terrorists.” The model bill, though ultimately unsuccessful, contained far harsher provisions than the AETA, going so far as to recommend a national registry listing the names of those convicted of animal or ecologically motivated offenses, similar to sex offender databases.¹⁵

After ALEC’s model bill failed to generate congressional support, some supporters and others interested in the issue turned their attention to amending the AEPA. The *Animal Enterprise Terrorism Act*, introduced in the House of Representatives by Representative Tom Petri (R-WI), was first referred to the House Judiciary Committee’s Subcommittee on Crime, Terrorism, and Homeland Security. The House hearing featured witness testimony from Brent McIntosh, Deputy Assistant Attorney General of the United States Department of Justice. McIntosh testified that although the *Animal Enterprise Protection Act*, in conjunction with interstate stalking laws, had been used successfully to indict and convict the six members of SHAC USA, incidents of “animal rights terrorism” perpetrated by members of the Animal Liberation Front and other radical animal rights groups were on the rise and required an aggressive federal response. He also testified to the difficulties inherent in investigating and prosecuting members of ALF because of its non-hierarchical structure. Organized in loosely affiliated “cells,” members of the ALF conduct “direct actions” that are merely attributed to the ALF name and reported on their website, provided the participants adhere to the ALF Credo: “to take all necessary precautions against harming any animal, human and non-human.”¹⁶ McIntosh testified that although the actual crimes perpetrated by animal rights activists are state crimes, state resources and investigative capabilities are insufficient because of the interstate nature of the planning and execution of the actions.¹⁷

Unlike the Senate hearing, "Activism vs. Criminality," the House hearing regarding the AETA offered an opposition witness, William Potter, a freelance journalist who had done extensive reporting on animal rights groups. Potter opened his testimony by reminding the committee "he was not a lawyer, or a constitutional law expert" but went on to express concerns about the proposed law's negative effects on legitimate protest activities and free speech. He also questioned the government's assertion that current federal and state laws were inadequate to combat radical animal rights (and environmental) activists and cited the recent arrests of members of the Earth Liberation Front (ELF) for a series of arsons in the western U.S. and the successful prosecution of SHAC USA.¹⁸ Potter was the only witness called to testify against passage of the AETA. No witnesses from either mainstream or more radical animal rights groups, nor any constitutional law or civil liberties groups appeared before the committee to discuss the bill or raise objections to the AETA.

The American Civil Liberties Union (ACLU) initially opposed the bill. In a "Letter to Congress" written in March of 2006, the ACLU expressed concerns that the AETA would criminalize protected First Amendment activities and argued that amending the AEPA was not necessary.¹⁹ But the ACLU dropped its initial *in toto* opposition to the AETA after some minor changes were made to the bill. On October 30, 2006, the ACLU sent a letter to James Sensenbrenner, Jr., then Chairman of the House Judiciary Committee, officially withdrawing its opposition to the AETA. Instead, the ACLU recommended a few "minor changes" be made to the law such as clarifying that the law pertained only to lawful animal enterprises.²⁰ The ACLU also urged that the AETA be amended to exclude economic damages "resulting from a boycott, protest, demonstration, investigation, whistleblowing, reporting on any animal mistreatment, or any public, governmental, or business reaction to the disclosure of information

concerning the animal enterprise.” Although the language recommended by the ACLU was not included in the final version of the bill, the suggestions helped lead to the inclusion of a section titled Rules of Construction meant to provide exemptions for protected First Amendment speech activities.²¹

The Senate passed the AETA unanimously by a voice vote on September 29, 2006.²² The House of Representatives passed the law under a “suspension of the rules” on November 13.²³ Bills considered under a “suspension” are deemed non-controversial and require approval of two-thirds of the representatives present to suspend the rules. After the rules have been suspended, debate is limited to forty minutes and no additional amendments may be offered.²⁴ On November 27, 2006, President George W. Bush signed the AETA into law without comment.

The Law

The AETA amends Section 43 of Title 18 of the United States Code (formerly AEPA) to read:

(a) Offense.—whoever travels interstate or foreign commerce, or uses or causes to be used the mail or any facility of interstate commerce—

(1) for the purpose of damaging **or interfering with** the operation of an **animal enterprise**; and

(2) **in connection** with such purpose—

(A) **intentionally** damages or causes the loss of any real or personal property (including animals or records) used by an animal enterprise, or any real or personal property of a person or entity having a connection to, a relationship with, or transactions with an animal enterprise;

(B) **intentionally** places a person in reasonable fear of death or serious bodily injury to that person, a member of the immediate family...a spouse or intimate partner of that person **by a course of conduct** involving threats, acts of vandalism, property damage,

criminal trespass, harassment, or intimidation; or **conspires** to do so [emphasis added].²⁵

The broadened scope allows the AETA to cover crimes and “direct actions” against tertiary targets such as those identified in the congressional hearings. In the “intentionality clause,” the law extends protections for third parties such as banks and insurance companies by explicitly stating that interference with such third parties to target a protected animal enterprise is a violation of the law.

The AETA removed the AEPA requirement that a “physical disruption” to the animal enterprise be demonstrated. That change allowed indirect interruptions, such as black faxing (sending multiple copies of a black page with the goal of exhausting the fax machine’s supply of black ink), email jamming, and harassment such as home visits or threatening phone calls, to fall under the more ambiguous phrase “interfering with operations.” Further, the new law requires that the defendant be shown to have “intended” to damage or interfere with the animal enterprise but specifies that intent could be established by a “course of conduct” defined simply as “a pattern of conduct composed of two or more acts, evidencing a continuity of purpose.” That requirement, when combined with the interstate commerce requirement, is meant to safeguard against accidental violations that could result from legal protest activity.

The second component of the AETA’s intent requirement stipulates that a violation intentionally places “a person (or a member of that person’s family) in reasonable fear of death or serious bodily injury.” That provision brings protections to individuals who are victims of phone calls or home visits where physical harm is either directly threatened or insinuated. The provision explicitly includes crimes such as property damage, vandalism, harassment, and intimidation that are aimed at terrorizing the victim. The

final provision of this section of the act makes it equally punishable to conspire, or attempt to commit, animal enterprise terrorism.

Congress relied on its constitutional authority to regulate interstate commerce to bring these crimes under federal jurisdiction. Normally, property crimes such as vandalism and arson are state crimes (unless the target is a governmental entity) and fall under the purview of state courts. The rationale for grounding both the AEPA and the AETA on Congressional regulatory authority under the commerce clause is that, although the actual commission of the crimes is localized, the planning, funding, and preparation for them usually involves either the transportation of people or funds or both across state lines.²⁶ Also, because many groups such as SHAC, ELF, and ALF lack a centralized governing body, the internet plays a significant role in coordinating the groups' activities by facilitating access to information activists may use to commit crimes.

By creating a federal law of animal enterprise terrorism and expanding the original act's scope, resources allocated to investigate and conduct surveillance on animal rights groups could be increased. The testimony of U.S. District Attorney Brent McIntosh during the Senate hearings in 2004 revealed that the Department of Justice, in collaboration with the FBI, had established Joint Terrorism Task Forces (JTTFs) "in dozens of cities across the country." The JTTFs, initially commissioned after 9/11, had the broad purpose of "enhanc[ing] cooperation among local, state, and federal counterterrorism assets." Despite the increase in federal efforts, McIntosh spoke about the difficulties faced in investigating and prosecuting cases of animal (and ecological) domestic terrorism without the protection of adequate federal law and the budgetary increases and the enhanced investigational tools that would come along with it.²⁷

The AETA states that if a defendant has satisfied the interstate component of the act, the prosecution must also show that the defendant intentionally

damaged or interfered with the animal enterprise, or intentionally placed the victim in reasonable fear of death or serious bodily injury. In both cases, the standard of proof rests with the idea of a "course of conduct." While this "intentionality clause" appears to provide a safeguard against such accidental or unwitting violations of the act as unintended trespass during lawful demonstrations, the clause does not exempt all conceivable transgressions. The "intent" standard derives from the "course of conduct" provision and requires merely that the prosecution demonstrate that two or more acts demonstrate a "continuity of purpose." The law, however, allows other ways to meet the "course of conduct" requirement and may rest on the more nebulous "intent" to commit an act of terrorism by "instilling a reasonable fear."

Provisions such as the vague idea of "reasonable fear" have generated the most controversy and criticism from civil liberties lawyers and advocates who argue that the unspecific "course of conduct" requirement contributes to a chilling effect on free speech. A chilling effect is a concern whenever laws are passed that deal directly with, or collides with, protected First Amendment free speech activities.²⁸ The argument is that any law that involves criminalizing protest or speech activities must be carefully crafted to avoid any chance that people, seeking to exercise their protected right to speech; may not be able to discern what is, or what is not allowed under the law. Any ambiguity in the law may cause people to err on the side of caution and choose not to exercise their right to free speech, thus creating a chilling effect.

When some lawmakers and civil liberties experts raised concerns about the chilling effect and the AETA, proponents countered that the section of the act titled Rules of Construction provide an adequate safeguard. Although the Rules of Construction do exempt many types of protest activities such as economic disruption from a lawful boycott, problems with the language

remain and could contribute to a chilling effect. The Rules of Construction of the AETA state that the act shall not be construed:

- (1) to prohibit any expressive conduct (including peaceful picketing or other peaceful demonstration) **protected from legal prohibition** by the First Amendment to the Constitution;
- (2) to create new remedies for interference with activities protected by the free speech or free exercise clauses of the First Amendment to the Constitution, regardless of the point of view expressed, or to limit any existing legal remedies for such interference; or
- (3) to provide exclusive criminal penalties or civil remedies with respect to the conduct prohibited by this action, or to preempt State or local laws that may provide such penalties or remedies [emphasis added].²⁹

The provisions of the AETA exempted from prosecution only those who are engaged in expressive conduct “protected from legal prohibition.” Many protest activities used by activists across the political spectrum are not actually protected from legal prohibition by the First Amendment. Protest techniques such as civil disobedience are often left unprotected by the First Amendment because they are on private property and are therefore in violation of trespass laws. Indeed, authorities often use trespass laws and arrests to bring such actions to an end. Also left unprotected are private, undercover investigations and clandestine videotaping of animal abuse. Those actions likewise often violate trespass laws. Finally, the act provides no exemption for whistleblowers.

Therefore, the AETA, while providing protections for some types of protest activities, fails to exempt one of the more effective means of protest available to activists. If, during the Civil Rights movement, the lunch counters of the South had enjoyed protections similar to those the AETA affords to animal enterprises, hundreds of otherwise law-abiding

citizens might have found themselves being branded as “terrorists” under the letter of the law.

The most significant flaw in the AETA is the broadening of the federal definition of domestic terrorism and the widening of the types of crimes that are considered to be acts of terrorism. The AETA, for the first time, codifies at the federal level the crime of terrorism for property crimes. For example, a defendant who releases mink from a farm and is convicted under the AETA would be convicted as a terrorist. While such an action is a crime, one must ask: does it constitute an act of terrorism? Should the perpetrator of such a crime be treated as a terrorist on the same level as a member of Al-Qaeda? Even the Patriot Act defines domestic terrorism more narrowly as actions that:

- A) involve **acts dangerous to human life** that are a violation of the criminal laws of the United States or of any State;
- B) appear to be intended – (i) to intimidate or coerce a civilian population; (ii) to influence the policy of government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and
- C) occur primarily within the territorial boundaries of the United States [emphasis added].³⁰

Under the AETA, property crimes such as vandalism, theft, arson, and trespass, even when steps are clearly taken to assure that no human life is endangered, become acts of terrorism, and the perpetrators become terrorists.

Definitions

The AETA provides criminal penalties for intentionally instilling in the victim a “reasonable fear of death or serious bodily injury.” Many acts and crimes committed by members of radical animal rights or

environmental groups could conceivably be found to instill a reasonable fear. What researcher would not fear bodily harm or even death after receiving ominous, threatening phone calls in the middle of the night, or falling victim to one of the home visits? People would be right to fear for their lives after hearing that a pipe bomb had been detonated at their lab, or in the car of a colleague. Any such action is serious, criminal, and should be met with the full force of the law. Those crimes are designed to terrorize their victims, and as such it is easy to argue that they invoke terror in their targets. Similar crimes, however, such as those levied against abortion providers, have not been prosecuted as acts of terrorism.³¹

More difficult are those cases in which “reasonable fear” is more convoluted. The definitions section of the AETA is eerily silent about what constitutes a “reasonable fear.” Four lines provided in the definitions section relate to serious bodily injury, and an additional seven lines define a substantial bodily injury. But no definition provides guidance for what constitutes a “reasonable fear of death or serious bodily injury.” Therefore considerable gray areas exist in the law, for no two individuals are likely to calculate fear and risk the same way. What may invoke terror in one person, may merely trouble another.

A definition of reasonable fear would help to mitigate concerns that the AETA creates a chilling effect on speech, because a definition of fear would clearly establish where the line is drawn. Protests outside a researcher’s home may be annoying for the researcher and for their neighbors, but protesters have found that tactic to be a useful tool to compel their targets to abandon their use of animals in research, lessen the use of animals, or conduct animal research more humanely. The presence of protesters outside one’s home, however, especially if those protestors are often referred to as “terrorists” and “extremists” by the news media, may cause some individuals to experience a reasonable fear. If the law required that specific crimes or actions be shown, or a standard of proof be met, the law

could still protect and defend victims properly, while avoiding the issues presented by vagueness.

The final provision of the act stipulates that conspiracies to commit, or attempt to commit, the crime of animal enterprise terrorism are equally punishable under the law. The conspiracy clause of the AETA is problematic in two key ways. First, by not distinguishing between an actual violation and a planned violation, the act provides no incentives for an individual to opt out of a planned crime, especially if that person fears surveillance or the negative testimony of a co-conspirator. Of course, a criminal who is merely thwarted before he or she is able to execute a crime should not be rewarded, but in many areas of law the penalty for attempting a crime is substantially less than the penalty for committing it. For example, differences in punishment are quite distinct between a conspiracy to commit murder and murder.

The second issue that arises in relation to the conspiracy clause is that once again the definitions section is silent about what constitutes a conspiracy or an attempted conspiracy. Nor is the act clear about what burden of proof the state must demonstrate to secure a conviction using that clause. The penalties section of the AETA demonstrates how the above gaps could become problematic because the graduated punishments for violations of the act are determined partly by the sum of economic damages sustained by the animal enterprise. Further, the definition of "economic damages" suggests that the act may come up against real, but conflicting issues, if it is used to prosecute a defendant merely on the grounds of conspiracy or attempt to violate the AETA. In that circumstance, the prosecution will require that the state calculate the appropriate criminal sanction based on hypothetical economic costs to the targeted animal enterprise from a likewise hypothetical crime.

Penalties

The penalties section of the AETA is distinctly different from that of its predecessor. The AEPA established a six-month sentence for a person convicted of causing a "physical disruption to the functioning of an animal enterprise," causing damages or causing "the loss of any property used by the animal enterprise" valued at less than \$10,000 if no one was harmed. That sentence would, of course, be in addition to any sanctions from any accompanying property crime or other subsequent convictions that may have been levied against the defendant. If the crime resulted in "major economic damage" to the enterprise (\$10,000 or more), but had not caused serious bodily injury or death, the AEPA established a sentence of up to three years.³²

If the crime resulted in "serious bodily injury or death" it was to be treated as an aggravated offense and the penalties (again, likely levied in addition to other state or federal charges) were much stiffer, calling for a term of up to 20 years for an offense that caused serious bodily injury to another individual. No provision in the AEPA provided for charges for merely "instilling a reasonable fear of serious bodily harm or death." The AEPA also provided for possible restitution for the animal enterprise to recover damages "for the reasonable cost of repeating any experimentation that was interrupted or invalidated as a result of the offense; and the loss of food production or farm income reasonably attributable to the offense."³³

The AETA, however, departs from that format entirely and metes out graduated or tiered penalties derived either from the amount of economic damages done to the animal enterprise or victim, or by being shown to have "instilled a reasonable fear of death or serious bodily injury" to the enterprise or the individuals who work there. The penalties section of the AETA appears as follows:

(b) Penalties—The punishment for a violation of section (a) or an attempt or conspiracy to violate subsection (a) shall be—

(1) a fine under this title or imprisonment not more than 1 year, or both, if the offense does not instill in another the reasonable fear of serious bodily injury or death and—

(A) the offense results in no economic damage or bodily injury;
or

(B) the offense results in economic damage that does not exceed \$10,000

(2) a fine under this title or imprisonment for not more than 5 years, or both, if no bodily injury occurs and—

(A) the offense results in economic damage exceeding \$10,000 but not exceeding \$100,000; or

(B) the offense instills in another the reasonable fear of serious bodily injury or death;

(3) a fine under this title or imprisonment for not more than 10 years, or both, if—

(A) the offense results in economic damage exceeding \$100,000

(B) the offense results in substantial bodily injury to another individual;

(4) a fine under this title or imprisonment for not more than 20 years, or both, if—

(A) the offense results in serious bodily injury to another individual;
or

(B) the offense results in economic damage exceeding \$1,000,000;
and

(5) imprisonment for life or for any terms of years, a fine under this title, or both, if the offense results in death of another individual.³⁴

The AETA completely alters the penalties originally established in the AEPA. The lowest level offense provides for a one-year sentence, fine,

or both, for damages less than \$10,000, or for violations that render no economic damage at all. Whereas the AEPA had a maximum sentence with a three-year cap for "victimless" crimes with damages exceeding \$10,000, the tiered structure of the AETA calls for a sentence of up to five years if the crime causes economic damages between \$10,000 and \$100,000 but no serious bodily injury. If the crime causes more than \$100,000 in damages or results in substantial bodily injury (defined as "deep cuts or abrasions," "broken bones," "significant physical pain," or "illness") the defendant may be sentenced to up to 10 years. Finally, the act provides for a sentence of up to twenty years if the damages exceed \$1,000,000 or if the crime results in serious bodily injury to another individual.

Concurrently, the act also calls for a sentence of up to five years if the offense "instills in another a reasonable fear of serious bodily injury or death." That provision is separate from any necessity to demonstrate economic damages, but remains tied to the intentional violation of one of the provisions against trespass, harassment, or intimidation. Finally, the act provides for life imprisonment if the offense results in the death of another person.

The term "economic damages" is defined in the definitions section of the AETA as:

(A) means the replacement costs of lost or damaged property or records, the costs of repeating an interrupted or invalidated experiment, **the loss of profits, or increased costs, including losses and increased costs resulting from** threats, acts of vandalism, property damage, trespass, harassment, or intimidation taken against a person or entity on account of that person's or entity's connection to, relationship with, or transactions with the animal enterprise; but

(B) does not include any lawful economic disruption (including a lawful boycott) that results from lawful public, governmental, or

business reaction to the disclosure of information about an animal enterprise [emphasis added].³⁵

The language above suggests that a wide range of possible damages may be included when tabulating the sentence for an offense that violates the AETA. “[I]ncreased costs, including losses and increased costs resulting from [violations]” could allow the prosecution to include the costs to an animal enterprise or individual of any security systems installed in response to a defendant’s actions or threatened actions. While that cost tabulation makes sense for the purpose of restitution, it is less clear that the defendant’s sentence or level of punishment should be tabulated using such an ambiguous methodology. For example, a defendant who willfully commits property crimes of trespass and theft by releasing mink from a mink farm, could face a substantially stiffer criminal penalty under the methods of tabulation allowed in the AETA.

While not considered protected speech, low-level crimes such as trespass have been committed throughout history to advance causes such as the Civil Rights Movement in the United States. In that case, protestors knew that their actions were illegal, that they would be subject to arrest, and that they would be issued relatively predictable criminal sanctions. Therefore, they were able to conduct a personal “cost-benefit analysis” about whether to take part in extra-legal forms of protest. Having charges tied to economic damages clouds the question of whether to participate in protest and lends support to concerns that the AETA could chill speech by discouraging dissent.

As the conspiracy to commit or attempt to commit the crime of animal enterprise terrorism is equally punishable under the AETA, a clear system is necessary to determine the economic damages resulting from what, in some cases, will be only a hypothetical crime. In fact, defendants charged under the conspiracy clause of the AETA may find themselves facing a

more serious sentence merely by being caught before the commission of the crime. Before the act is committed, its success is impossible to know; nor can anyone know whether the act would have caused the desired amount of damage to the enterprise. An arson meant to destroy a building may merely cause superficial damages and, as such, the amount of economic damages included to calculate the defendant's sentence could have the ironic outcome of resulting in lesser charges. If, however, investigators thwarted a defendant in the planning stages of the same arson, that defendant could potentially face a far harsher criminal penalty, assuming that the prosecution includes the hypothetical economic damages that may have resulted if the planned arson were successful. Such inconsistencies call attention to the inherent problem of providing no distinction between planned and executed crimes in the AETA. Altering the penalties section in a way that eliminates the double hypothetical could mitigate the problem.

Perhaps the AETA could be amended or modified so that the commission of particular crimes covered under the act would generate particular penalties. That modification would allow the AETA to accomplish its intended goal of providing a federal remedy for addressing escalating instances of crimes committed against animal enterprises and individuals associated with them, while eliminating many of the more problematic and, in some cases, controversial elements of the act. An excellent model for how such a modification might be accomplished presents itself in Pennsylvania's recently enacted ecoterrorism law.

The Pennsylvania Ecoterrorism Law

On April 14, 2006, Pennsylvania Governor Edward Rendell signed into law House Bill 213 amending the state criminal code Titles 18 (Crimes and Offenses) and 42 (Judiciary and Judicial Procedure) to add "an offense and civil action relating to the crime of 'ecoterrorism.'" The law appears in the Pennsylvania criminal code as:

§ 3311. Ecoterrorism.

(a) General rule.—A person is guilty of ecoterrorism if the person commits a specified offense against property intending to do any of the following:

(1) Intimidate or coerce an individual lawfully:

(i) participating in an activity involving animals, PLANTS[sic] or an activity involving natural resources; or

(ii) using an animal, PLANT or natural resource facility.

(2) Prevent or obstruct an individual from lawfully:

(i) participating in an activity involving animals, PLANTS or an activity involving natural resources; or

(ii) using an animal, PLANT or natural resource facility.³⁶

The bill listed specific offenses against property including certain arson offenses, causing or risking catastrophe, criminal mischief, institutional vandalism, agricultural vandalism, agricultural crop destruction, burglary if committed in order to commit another specified offense, criminal trespass if the crime is committed to threaten or terrorize the owner or occupant of the premises, starting a fire or defacing or damaging the premises, theft by unlawful taking, and theft by deception, forgery, or identity theft.

The list of crimes covers many of the tangible and intangible offenses committed by radical animal and ecological activists highlighted in the congressional hearings and provides victims with protection from most of the more egregious crimes. Like the AETA, the Pennsylvania law does not create any new crimes; it merely allows for enhanced criminal penalties based on the motivation or target of the crime, but the act clearly delineates the enhanced penalties. A defendant convicted of having committed a crime of ecoterrorism, faces an increase of one degree on the subsequent property crime charge. For example, if the specified property crime was a third degree misdemeanor, it will be increased to the second

degree. Likewise, a first-degree misdemeanor will be increased to a Class C felony. If the specified offense against property is already a first-degree felony, such as arson, the defendant's possible sentence could be enhanced to a term of up to 40 years. The penalties in the Pennsylvania law are severe enough to dissuade activists from committing these crimes but are not based on methodologies that are open to conjecture as is the case with the AETA.

By clearly stipulating both the crime and the expected punishment, and by tying more obfuscated crimes like harassment or intimidation to the commission of a property crime such as trespass conducted "in order to threaten or terrorize the owner or occupant of the premises," the Pennsylvania law seems to avoid the more problematic elements of the AETA. Pennsylvania allows for victims of animal and ecologically motivated crimes to seek appropriate reprieve from the government, while avoiding a lack of clarity in either the crime or the punishment.

The Pennsylvania law does not contain a conspiracy clause as does the AETA, but other state laws cover attempts and "conspiracies to commit" some of the crimes listed in the ecoterrorism law. Like the AETA, the Pennsylvania law allows the recovery of damages to the enterprise or individual, but the restitution damages are limited to tangible losses and must be demonstrated to be a result of the specified crime used to secure conviction. A separate section also allows for civil action and relief by "an individual aggrieved by the offense of ecoterrorism." Finally, the Pennsylvania law also contains a section similar to AETA's Rules of Construction which immunizes protected free speech activities from prosecution under both the federal and the state Constitution, although with many of the same limitations present in the AETA.

Civil liberties groups raised objections and concerns about the Pennsylvania law just as they did about the AETA. In testimony presented

to the Pennsylvania Senate Judiciary Committee, Larry Frankel, Legislative Director of the American Civil Liberties Union of Pennsylvania, expressed concerns about the constitutionality of the law because of its specialized focus on animal and environmental activists, asserting that the law unfairly engages in “viewpoint discrimination.” Critics of AETA had expressed similar objections, asserting that the laws unfairly target animal and environmental protestors in order to stifle dissent. Critics argue that, despite containing provisions protecting and exempting legal, legitimate protest activities, both AETA and the Pennsylvania law present First Amendment issues because they seem to target issue-specific political speech.³⁷ The AETA would likely survive First Amendment challenges, however, because the First Amendment provides protections only for legal speech, subject to what is known as “time, place, and manner” restrictions. Many of the techniques used by radical animal rights activists against their targets are extra-legal and outside of the bounds of protected speech activities.

The AETA and FACE

An examination of rulings involving the *Federal Access to Clinic Entrances Act of 1994* (FACE) provides a good predictor of how the court may view the constitutionality of the AETA. In his article, “Cages, Clinics, and Consequences: The Chilling Problems of Controlling Special-Interest Extremism,” Dane Johnson offered a comparative analysis of FACE and the AETA. He asserted that those who crafted the AETA borrowed language and clauses from FACE, particularly the Rules of Construction. The passage of FACE created a firestorm of commentary alleging that it would chill the exercise of speech and that its language was too ambiguous and broad. Johnson analyzed the cases filed against FACE, and noted that the law withstood not only First Amendment Free Speech challenges, but

Commerce Clause and “vagueness and substantial overbreadth” challenges as well. He predicted that, because of the similarities the two laws share, AETA would survive similar challenges. Although FACE and AETA mirror each other, some distinct differences exist. The text of the Freedom of Access to Clinic Entrances of 1994 helps highlight the issues.

(a) Prohibited Activities—Whoever—

(1) by force or threat of force or by physical obstruction, intentionally injures, intimidates or interferes with or attempts to injure, intimidate or interfere with any person because that person is or has been, or in order to intimidate such person or any other person or any class of persons from, obtaining or providing reproductive health services;

(2) by force or threat of force or by physical obstruction, intentionally injures, intimidates or interferes with or attempts to injure, intimidate or interfere with any person lawfully exercising or seeking to exercise the First Amendment right of religious freedom at a place of religious worship; or

(3) intentionally damages or destroys the property of a facility, or attempts to do so, because such facility provides reproductive health services, or intentionally damages or destroys the property of a place of religious worship, shall be subject to the penalties provided in subsection (b) and the civil remedies provided in subsection (c), except that a parent or legal guardian of a minor shall not be subject to any penalties or civil remedies under this section for such activities insofar as they are directed exclusively at that minor.

(b) Penalties.— Whoever violates this section shall—

(1) in the case of a first offense, be fined in accordance with this title, or imprisoned not more than one year, or both; and

(2) in the case of a second or subsequent offense after a prior conviction under this section, be fined in accordance with this

title, or imprisoned not more than 3 years, or both; except that for an offense involving exclusively a nonviolent physical obstruction, the fine shall be not more than \$10,000 and the length of imprisonment shall be not more than six months, or both, for the first offense; and the fine shall, notwithstanding section 3571, be not more than \$25,000 and the length of imprisonment shall be not more than 18 months, or both, for a subsequent offense; and except that if bodily injury results, the length of imprisonment shall be not more than 10 years, and if death results, it shall be for any term of years or for life.³⁸

Like AETA, FACE protects against unwitting violations by requiring that intent be demonstrated and provides protection to abortion providers who are the targets of aggressive, sometimes violent, anti-abortion campaigns. The first and perhaps most notable distinction between the two laws is that a violation of FACE is not defined as an act of terrorism. Another difference appears in the prohibited activities section of FACE where equal protection is provided both to clinics and their opponents, thus extending protections to “any person lawfully exercising or seeking to exercise the First Amendment right of religious freedom at a place of religious worship.” The AETA affords no such inverse protections to either animal rights activists, or to the animals they seek to protect.

Further, language in FACE directs the courts to treat a “nonviolent physical obstruction” less harshly than other, more serious violations. Clearly the authors of FACE felt it prudent to distinguish between violent and nonviolent actions with harsher penalties reserved for violent actions. Why provide such exemptions, when they conflict so sharply with the purpose of the law? Perhaps the authors hoped to mitigate a potential chilling effect by allowing protestors to understand that a peaceful violation of the law would not result in harsh sanctions until the defendant could be shown to be a habitual offender.

FACE lacks the graduated or tiered penalties found in the AETA, allowing anti-abortion activists to calculate possible penalties for violating the law. The penalties section of the AETA, with its ambiguous and possibly problematic language, may hold the most promise for challenging the law in court. No one has yet been convicted of violating the AETA, but the first charges under the AETA have now been handed down. Until that litigation works its way through the courts, no one knows whether the law will withstand the vigorous challenges that defense attorneys are likely to advance, especially if their clients face charges from the more vague or expansive provisions of the act. Still, several modifications or amendments to the law could mitigate some of these hypothetical issues and preempt later problems in court.

Conclusion

In spite of the AETA, incidents of animal rights extremism still make headlines. Recently, researchers involved with animal research at the University of California, Santa Cruz, were the targets of pipe bomb attacks,³⁹ and in the past year, four releases of mink from mink farms have occurred in the western U.S.⁴⁰ Because the AETA passed virtually uncontested, and because it addresses a legitimate and high profile legal issue, little support may exist for the outright repeal of the law. Several possible modifications, however, could improve it.

The AETA should be revisited to improve the clarity of its definitions and scope. Congressional hearings clearly demonstrated the need to extend the AEPA to include tertiary targets because its original scope was too narrow to provide protection to many of the enterprises and individuals who had been victims of animal rights extremism. Although legitimate activist groups must have their rights to protest zealously safeguarded, the government must equally safeguard the rights of its citizens to live and

work free from fear and intimidation, and keep their property safe from destruction.

Other amendments the AETA made to the AEPA are less easily justified. The inclusion of the terrorist label for non-violent property crimes broadens the legal definition of domestic terrorism and could have several negative effects. First, the fear of being branded a terrorist could dissuade individuals from engaging in some forms of extra-legal protests such as civil disobedience or campaigns that use extraordinary tactics to coerce companies and individuals to abandon their use of animals in research. Many of the techniques used by animal rights protestors are low-level offenses, and are no doubt annoying for their targets. Those techniques, however, have often brought about real changes. The law should distinguish between the actions of a protestor from those of a criminal. The former wishes to shame or annoy a company or individual into abandoning the use of animals, while the latter truly wishes to intimidate, threaten, harm, or instill fear in the target.

Given the structure of the law, activists charged with making harassing (but non-threatening) phone calls, civil disobedience, or low-level property crimes such as graffiti might not be charged under AETA even if their actions meet the definitions of being interstate in nature and consistent enough to establish a "course of conduct." A more likely scenario is that possible charges under the AETA could be used as leverage to pressure a defendant into becoming an "informant," or pleading guilty to stiffer state charges than might be the case without the threat of AETA charges.

Also, the AETA makes it a crime to "intentionally damage or interfere with the operation of an animal enterprise." Of course, the goal of many animal rights activists is to interfere with business operations and bring about reforms. Business reforms tend to be enacted only when it becomes more fiscally or operationally prudent to do so. Although the act is

purportedly written to require that the interference be caused in conjunction with "criminal acts," the language of the law actually provides for a wide net of possible infractions, many of which may better be described as nuisances than acts of terrorism.

The crafters of the bill clearly wanted to create a mechanism to distinguish crimes against animal enterprises from their apolitical counterparts. A state arson charge provides no distinction between arson for insurance purposes and arson committed to influence a company's business practices. AETA accomplishes that and more. By defining the distinctions, AETA may offer a practical solution to a need, but it may also overreach as it extends to every crime that may be perpetrated against an animal enterprise. Perhaps the Pennsylvania ecoterrorism law could provide a model for how to accomplish the general goal but in a manner that still allows for an expansion of the legal definition of terrorism to include some property crimes, while avoiding the wide net of the AETA.

In fact, a federal remedy already exists, one that is available to judges and accomplishes just such a distinction. Terrorist enhancement, a sentencing mechanism used at the discretion of a judge, can heighten the criminal penalties of defendants found to have committed politically or ideologically motivated crimes and distinguish those crimes as terrorist acts. Indeed, one judge used the enhancement measure to set the penalties for members of the Earth Liberation Front convicted for a series of environmentally motivated arsons in the Northwest.⁴¹ The Pennsylvania law may also provide a good model for changes that could be made to the way penalties are determined under the AETA. Rather than having the tiered or graduated penalties based largely on economic damages, the AETA could provide for an enhancement mechanism similar to the one used in the Pennsylvania law. That change would eliminate some of the most contentious elements of the AETA by providing clear criminal

punishments not subject to economic damages that may be arbitrarily tabulated.

Given the broad bipartisan support for the AETA, substantial revision of the law is doubtful. Therefore, a more likely approach could be to revisit the definitions section of the act and provide clear and specific definitions for problematic terms. For example, the definition of economic damages could be revised to remove ambiguous terms such as "increased costs or losses." Or, perhaps sub-definitions could be provided to stipulate what key terms mean, as is done to distinguish the difference between what is considered a "substantial" and "serious bodily injury."

Another way to improve the act would be to provide a definition for the term "reasonable fear." Although the prosecution must demonstrate that the defendant "instilled the reasonable fear or serious bodily injury or death" through a "course of conduct," the law offers guidelines about what qualifies as reasonable. A clear, inclusive definition of the term reasonable including a standard of proof that the prosecution is required to meet would address this problem. A further prudent change would be to require that the prosecution show clear and convincing evidence that the climate of fear was indeed the result of the defendant's actions rather than those of other, perhaps unaffiliated activists who may have been simultaneously targeting the victim.

Also, the law needs a definition for what constitutes an attempt or a conspiracy to violate the AETA. Again, the lack of a standard of proof to establish an attempt or a conspiracy is especially problematic with the AETA because of the double hypothetical it creates. Perhaps a specific "course of conduct" could be established that defines or demonstrates a conspiracy and an attempt to conspire. Given that the First Amendment provides activists with freedom of speech and freedom of association, the conspiracy clause in the AETA is far too ambiguous to allow the average

citizen to decipher where the line is drawn between supporting a more radical protest group, and actually conspiring with them.

Finally, the Rules of Construction should be rewritten to exempt certain extra-legal activities, provided those activities are conducted with the purpose of either facilitating a peaceful civil disobedience on private property or for documenting and revealing violations of animal welfare laws. These actions could still be subject to applicable state criminal charges such as trespass, or to civil suit actions such as Huntingdon's civil suit against PETA, but they should not be classified as violations of the AETA and therefore acts of terrorism. These changes represent relatively minor adjustments to the AETA but would go a long way toward addressing some of its more problematic elements. The result might provide for a better law, one that accomplishes its purpose while mitigating negative peripheral effects.

At the end of February 2009, four California residents were arrested and indicted for violating AETA. Adriana Stumpo, Nathan Pope, Joseph Buddenberg, and Maryam Khajavi face charges for violating several provisions of AETA by participating in activities the FBI alleges were aimed at intimidating and harassing several University of California researchers. Pope, Stumpo and Buddenberg face charges for publishing the names and addresses of researchers who the FBI allege were subsequently targeted in the Santa Cruz pipe-bomb attacks, although they have not been charged with participating in the pipe-bomb attacks. All four individuals face charges resulting from participation in "home visits."⁴² These prosecutions will provide the first legal test of AETA and will likely invoke several of the provisions discussed in this paper. Until the cases are litigated it is impossible to know whether the concerns of critics will become realities. These first prosecutions under AETA may demonstrate that the act accomplishes its goal of reducing animal rights

motivated crime, or reveal unintended consequences. As the law is written today, challenges highlighting problems of definitions and scope are likely to be raised by the defense.

Limited scrutiny of the bill during the committee process and the limited debate in Congress failed to show whether the AETA represented a necessary and proper solution to address incidents of animal rights extremism. The commentary offered both in defense and in opposition to the act centered almost exclusively on First Amendment concerns while little attention was given to the actual language of the law. Citizens count on lawmakers to exhaustively scrutinize legislation like the AETA, especially when it involves civil liberties and domestic security; the unabashed use of loaded rhetoric should have no role in the legislative process. The post 9/11 climate may have contributed to the dereliction of this congressional responsibility, and further study is necessary to determine what role anti-terror sentiment played in influencing lawmakers and the passage of the AETA.

Finally, a national dialogue needs to focus on the traditional legal definition of domestic terrorism and whether legislation should be focused exclusively on one particular social movement; as it is with the AETA. Measuring whether the AETA is adversely affecting legitimate animal rights groups, or chilling speech, is difficult because no empirical data currently exist that would measure whether people are "opting out" of protesting and activism because of fears of being branded a terrorist. Further, the extra-legal techniques described in this paper are not exclusively deployed by the animal rights movement but rather are emblematic of several fringe protest groups championing causes on both the right and left of the political spectrum. The ability to dissent is the cornerstone of any functioning democratic society and that right should be protected zealously even when it is politically difficult to do so. However, many of the techniques described

by witnesses and targets of animal rights extremism are deplorable and have no place in a freely functioning society. The grievances expressed are real and victims must be able to find appropriate reprieve through the legal system. As it exists today the AETA is too problematic to serve that function.

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**Other Research by McNair Scholars
at the University of Oregon**

Abstracts

**The Cost of Being Close:
Self-Other Overlap and Domestic Violence**

by J. Anna Bell

Psychology and Sociology
Honors College

Faculty Mentor: Sara Hodges
Psychology

The social psychological concept of self-other overlap describes how identities and cognitive representations of people tend to merge as they become closer to one another. Because greater self-other overlap tends to be associated with such positive characteristics as closeness and intimacy, it has generally been considered a desirable trait in relationships. However, these positive characteristics of self-other overlap have yet to be explored in situations that are less than ideal, such as relationships involving domestic violence. This study explores the possible negative consequences of having self-other overlap in these relationships, including greater difficulties removing oneself from the relationship, getting over the abusive partner, and having lower levels of well-being.

Coal Subsidies: International Consequences from Perceived National Prerogatives

by William Clark
Political Science

Faculty Mentor: Ronald Mitchell
Political Science

Over the last century, United States resources have been heavily subsidized, lending large advantages to producers and encouraging the over-development and consumption of energy resources. Recent economic pressures and security concerns are creating increasing calls for a rise in offshore drilling and measures to supplant imported energy resources with domestic coal as a source of affordable fuel and electricity. At the same time, apprehension about climate change has led to proposals that suggest reducing our reliance on coal because of the immense carbon and toxic emissions associated with its use. This study evaluates subsidy theory and the extent of U.S. coal subsidization as well as the domestic and international environmental impact on global carbon emissions that could result from widespread subsidy removal.

**Southern Women and the U.S. Civil War:
Did War Weariness
Influence the Secession Effort?**

by Dusty Dodd

History

Faculty Mentor: Jack Maddex

History

What role did Southern women play in the Civil War and its outcome? Historians of women's lives show that whether women were of the planter class, yeoman class, or landless, the social identity of Southern white women depended on male family members. According to diaries, letters, and journals, women watched with trepidation as the events of the Civil War changed their lives. Diarists such as Mary Boykin Chesnut, Kate Cumming, and Parthenia Antoinette Hague show the trials women faced. At the beginning of the war, women felt mixed emotions concerning Southern patriotism. By the end of the war, diaries and letters reveal that women had changed their outlook. Women began to encourage their men folk to come home from the battle fronts.

Marked Migrants: Race, Ethnicity, Disability, and the U.S. Immigrant Medical Inspection, 1878-1924

by Jenette Eccleston

History and Women's and Gender Studies

Faculty Mentor: Elizabeth Reis

Women's and Gender Studies

Faculty Mentor: Peggy Pascoe

History

During the final three quarters of the 19th century, the United States federal government enacted a web of immigration control measures that connected public health concerns to the economy and the racial identity of Americans. Immigration laws required migrants to undergo medical examinations carried out by the U.S. Public Health Service to reduce the threat of an epidemic. Yet, public health policies embedded in immigration law quickly moved beyond the detection of communicable infections. The United States Bureau of Immigration required a doctor to give a medical opinion about the body and mind of each migrant examined. Each medical opinion became the basis for assessing whether the migrant would be able to create a stable socioeconomic future, a judgment that reflected popular attitudes about helplessness and disability. Public health policies also reveal differential racial treatment that depended on changing and culturally imbued definitions of race.

Responses to Unpredicted Punishment Measured Through Event-Related Potential in Association with Depression

by Basim Farah

Psychology

Faculty Mentor: Edward Vogel

Psychology

Faculty Mentor: Kristina Hiatt Racer

Child and Family Center

Understanding how depression affects mental responses is vital for creating and implementing effective therapy techniques for those suffering from depression. This study uses event-related potentials (ERPs) to examine the relationship between self-reported depression levels and responsiveness to reward and punishment cues. Fifty-six University of Oregon undergraduates (thirty-four female and twenty-two male) were recruited to participate. The Child and Family Center, a UO affiliate, has gained approval from the IRB and collected data for analysis. The general assumption is that individuals with higher levels of depression experience a bias towards expecting negative events. Accordingly, the working hypothesis predicts that individuals with higher levels of depression will exhibit a less negative ERP response to unpredicted negative events.

On Bad Faith and Authenticity in Youth Athletics

by Jarrod Jonsrud
Philosophy

Faculty Mentor: Beata Stawarska
Philosophy

A recent decline in the numbers of youths participating in sports may be attributed to a number of factors, but some youths seem to develop a lasting hostility toward sport when they experience malicious situations brought on by the need to win. Violent conflicts arising from parents and coaches who instill a win-at-all-costs attitude in their players have led the National Alliance for Youth Sports, the governing body for all youth leagues across America, to respond by de-emphasizing the competitive aspects of their youth programs. Though this response seems a logical one, there may be harmful repercussions to the potential development of the child. I will engage sport from the existentialist perspectives of authenticity, freedom, responsibility, and bad faith. I then explore the problems caused by an over-emphasis on winning. Learning to recognize the existential benefits of sport may provide a way to preserve the competitive model in youth athletics while offering the authentic participant a more meaningful mode of existence.

Nigella Devours: Unabashed Appetite for Pleasure in American Food Discourse

by Marcella Ovalle

English

Faculty Mentor: Kathleen Karlyn

English

Since the 2001 release in the United States of her cookbook, *How to Be a Domestic Goddess: Baking and the Art of Comfort Food*, British cookery writer and television host Nigella Lawson has steadily contributed directly to American food discourse and indirectly to feminist inquiry. Joanne Hollows and Charlotte Brunsdon argue that Lawson detaches cooking from domestic drudgery by exhibiting cooking as a leisurely process that constructs one's own pleasures. Simply put, in pursuit of pleasure, Lawson cooks to eat, but she also publicizes otherwise privatized pursuits. Currently, her shows *Nigella Express* and *Nigella Feasts* run in syndication on television's The Food Network and she seasonally contributes to National Public Radio's *Morning Edition* and the *Kitchen Window* podcast. This article examines Nigella Lawson's work to explore how pleasure operates in American food discourse.

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Congress established TRiO programs to provide educational opportunities for all Americans regardless of race, ethnic background, or economic circumstances. While federal financial aid programs help students overcome financial barriers to attend college, TRiO programs help students overcome class, social, and cultural barriers to succeed academically. The UO has been awarded two TRiO programs—*Student Support Services* and the *McNair Scholars Program*.

The McNair Scholars Program is made possible through a grant from the U.S. Department of Education awarded to Academic Learning Services (ALS) and substantial institutional commitment (62% federally funded; 38% institutional support).



UNIVERSITY OF OREGON