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I, tried, real
hard to do this,
tried real hard
to make it last.
But ~~you~~ you can't
move on to the
future if you
can't let go of
the past.
I kept on &
Dena that you
cared
but the days
you real cold
and lonely
and you're
with someone
and I'm alone

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This photo collage was used for a poster for a projected movie titled *Loneliness*. It was part of the art and graphic design portfolio that earned Granik an Alfred H. Nolle Scholarship for 2008-09.

A Modern Construct: The Use of the Crusades as Political Propaganda

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I. Introduction

Few events in history evoke a mystique comparable to that of the European Crusades in the Holy Land. The Crusades have long been regarded as a pivotal event in Western history, but with the translation of many Arabic texts beginning in the 19th century and the rise of modern scholarship, a more accurate understanding of the Crusades has become possible. Perhaps the most interesting of many conclusions is that only very recently have voices in the Arab world agreed with the Western view that the Crusades were especially significant. Before then, Middle Eastern sources portrayed the military clashes of the Crusades merely as parts of a long and broader series of territorial conflicts. Today, however, the Crusades are being used symbolically to portray the attempt of the West to destroy Islamic culture.

II. History

It is commonly agreed that the Crusades, a series of military excursions from the late 11th century to the 13th century, began with a November 27, 1095, sermon by Pope Urban II urging Christians to take up the cross and free the Christians in the Holy Land as well as liberate the Holy Sepulcher, which was widely accepted as the tomb of Christ. Urban II

had been urged by the Byzantine Emperor Alexius Comnenus to come to their aid and help drive out the Muslim presence. The six-year-long First Crusade culminated in the capture and subsequent massacre of Jerusalem. None of the later Crusades matched the success of the first, but all were marked by extreme violence with many massacres perpetrated by both sides. Simply understanding the violence and the history preceding and resulting from the Crusades is imperative.

From the beginning of Islam, violence was part of the relationship between Islam and Christianity, although it is too simplistic to state that these conflicts have been and continue to be only a clash of religions. The spread of Islam shortly after the death of the prophet Mohammed in 632 brought Christianity and Islam into direct contact. Islam underwent a very aggressive movement to expand its influence that resulted in many conflicts in several geographic regions.

The conflict with the Byzantine Empire and the peoples in Andalusia offer two pertinent examples of this aggressive Islamic expansionism. Although the Western Roman Empire fell in 476, the Eastern Roman Empire still endured, eventually evolving into the Byzantine Empire that found itself under siege from Islamic forces. After the death of Mohammad, the forces of Islam aggressively engaged the Byzantines so that in less than a dozen years, Arabic armies had conquered Byzantine provinces in Syria, Palestine, and Egypt (Esler 170). In addition, Islamic forces overran all of Sassanid Persia and took control of large parts of North Africa (Esler 170). In 711, Arab forces invaded Spain from northern Africa, defeating the last Visigoth king at the battle of Guadalete (Stearns 179). The Arab leader Musa, in 712, took Medina Sidonia, Seville, Merida, and Saragossa, and such conquests extended all the way to the Pyrenees by 719 (Stearns 179). Although the expansion of Islamic forces was finally halted by the French general Charles Martel at the battle of Tours in 732, their military presence was not expelled from Spain until the end of the Reconquista in 1492.

Nor was Muslim rule in Andalusia more benevolent than crusader rule in the Holy Land, as is sometimes believed. The Muslim rulers in Spain massacred the populations of many cities, including Zaragoza, Osma, Zamora, Leon, Astorga, Coimbra, and Santiago de Compostela, and destroyed or looted religious sites. Mohammad I even ordered that “newly constructed churches be destroyed as well as anything in the way of refinements that might adorn the old churches added since the Arab conquest” (Fernandez-Morera 25). Obviously, the Christian destruction of holy sites during the Crusades was not without precedent. Heavy taxes were levied upon the Spanish to pay for building projects, and in times of conflict they were often stripped of land. Although the Crusaders did subjugate their conquered populations, this practice was no different than the methods that Muslim rulers used to administer Andalusia. These events began almost 500 years before the Crusades and continued for centuries after the expulsion of the European forces from the Holy Land.

It may be difficult for some to believe, but certain records point to peaceful coexistence between the crusaders and Muslims. There are also historical records of collaboration between the crusaders and Muslims. Moreover, the political fragmentation and infighting between the various Emirs was one of the primary reasons that the crusaders were so successful in their initial invasion, as on more than one occasion, Muslims allied themselves with the Franks to mutually destroy another Muslim power. Historian Amin Maalouf states that were several times Muslim forces could have driven out fragmented crusaders who were vying for succession, but the “Muslim princes, absorbed in their own quarrels, were

unable to take advantage of the dissension” (117). Outright hostilities between Muslims could be quite common. The experience of Zangi is a pertinent example. When Zangi, an Arab figure of authority, marched on Baghdad to confront the caliph there, his troops were slaughtered and he escaped only with the aid of a Kurdish officer, Ayyub. He later rewarded this officer, who happened to be the father of Saladin (Maalouf 117). Additionally, the city of Damascus actually requested protection from the French against attack by their Muslim neighbors (Maalouf 127). Those who wish to condemn the West for the part it played in the Crusades must also recognize the part that Muslims played in the destabilization of the Holy Land as well as the violence that ensued. Solely attributing the violence of the Crusades to the Europeans fails to consider the violence and destruction wrought by Arabs as well.

If the Crusades are examined through the lens of these conflicts and their history, a very different interpretation emerges. Clearly, a tradition of violence and bloodshed between Muslims and Christians had existed long before the Crusades began. The First Crusade and each subsequent Crusade did not arise in a vacuum, nor did they fail to influence each other. Although the historical association of Christianity and Islam is very important, several events did help to stimulate a response from many echelons of society that may not have engaged in an outright war before.

Pilgrims had been traveling to the Holy Land since the beginning of Christianity, but in the early 11th century, restrictions were placed on Christian pilgrims by the Fatimid imam al-Hakim. Sentiments were further exacerbated when the Church of the Holy Sepulcher was destroyed in 1009. These events inflamed the West, especially the papacy, and may very well be attributed as

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“contributory causes of the Crusades” (Zacour and Hazard 42). The many conflicts between Islam and Christian territories may have already produced an environment susceptible to crusader rhetoric, which was only compounded by pleas from the Byzantine Empire for aid against the invading Muslims. If all of

these events are considered, the conflict in the Holy Land was not an aggressive invasion without prior contributory events but was rather a continuation of a conflict that had existed for centuries. Thus, the Crusades were not examples of wanton aggressive Western imperialism, as they have been depicted for centuries, but were rather another conflict in a series of violent relations.

III. Historical Irrelevance of the Crusades in the Holy Land

While the Crusades and the many conflicts with Arabic armies have been incorporated into Western history as an integral part of that history, such was not the case in the histories of the Middle East. In the 20th and 21st centuries, many organizations and governments have harkened back to the Crusades as a propaganda tool to inflame anti-Americanism and

anti-Westernism. Personalities like Osama bin-Laden and Saddam Hussein have successfully used Saladin imagery to gain support and evoke nationalistic feelings. While images of Western barbarism against a supposedly peaceful Middle East are useful in generating loyalty and patriotism, they are historically false. Indeed, the Crusades did not have a major impact in the Holy Land until their recent misinterpretation for political and cultural aims and were little more than another victory in the many conflicts that have plagued the region for millennia.

The impact that the Crusades had in the West is obvious from their incorporation into art and literature, as well as into history texts; however, the history of the Crusades in the

[T]he history of the Crusades in the Holy Land was not significantly incorporated into histories in that region.

Holy Land was not significantly incorporated into histories in that region. If the Crusades had impacted the Middle East in any significant way, they undoubtedly would have been a major component of the historical works in the region; however, this is not the case. Indeed, the terms for the Crusades, *al-hurub al salibiyya* (the

“cross” wars) or *harb al-salib* (the war of the “Cross”), are a product of the 19th century (Hillenbrand 591-92). If this particular invasion from Europe was noteworthy in a way that would explain the use of crusading propaganda today, then the region’s failure to even generate a term to designate that particular war from any other until the 1850’s would seem inexplicable. Moreover, the first comprehensive work on the Crusades by a Muslim, the Egyptian scholar Sayyid ‘Ali al- Hariri’s *Al-akhbar al-saniyya fi’-hurub al-salibiyya* (*Splendid Accounts in the Crusading Wars*), was not published until 1899 (Hillenbrand 592). Even after its publication, few works followed. Not only were the Crusades unimportant to the history of the Holy Land; they were basically forgotten until the mid-14th century (Madden 218) because they were regarded as simply another war in an area where conflict was common. Thomas Madden, a noted Crusades historian, furthers this view by contending that in the 20th century the Crusades were “rescued from obscurity” and were “discovered and given a place of importance that they had never enjoyed before” (218). He adds, “[T]he ‘long memory’ of the Crusades in the Muslim world is, in fact, a constructed memory—one in which the memory is much younger than the event itself”(218). Simply stated, because the crusaders were eventually pushed out of the Holy Land and conflict was an accepted part of life in that time period, the Crusades were not seen as significantly different or worth separating from other wars.

In histories of the Western world, Salah al-Din, or Saladin as he is more commonly remembered, is one of the most prominent Muslim figures from the Crusades in the history of the West. His place in history may be due to the heroic, chivalric, and romantic image he secured in works like Sir Walter Scott’s *The Talisman*. While Saladin has been remembered throughout Western history, Madden and other scholars note that his memory was preserved

by very few in his own culture. Crusades historian Carol Hillenbrand states that Saladin “was ignored for centuries in the Middle East” (593). During Saladin’s reign, he was able to drive the Crusaders out of much of the Holy Land, was victorious at the battle of Hattin, and re-conquered Jerusalem. Although these victories were important, the crusading knights were reinforced and regained much of the territory in subsequent Crusades. Herein lies one of the probable reasons that Saladin was virtually forgotten in the Middle East: he did not enjoy the lasting success of others, nor was he able to complete the task of driving the crusaders out of the Holy Land. Another potential explanation for the historical marginalization of Saladin is his ethnic identity as a Kurd, a group repressed by the majority Shi’ite and Sunni populations. Kurdish history and poetry have presented Saladin as a hero and seem quite proud to share a common heritage. One Kurdish poet even writes that “Saladin *who took the world* was of Baban-Kurdish stock” (qtd. in Hillenbrand 594; emphasis added). Since Saladin was of an ethnic minority that was not well liked by the majority, it is not surprising to find that he would be pushed to the fringes of history in favor of more popular individuals.

Rather than Saladin, the Sultan Baybars, whose victories had a lasting impact on the Middle East, was elevated to the level of hero from that period of their history. Madden notes that two of his most important triumphs were repelling the Mongol invasion and driving out the last of the Latin Christian presence in the Holy Land, victories still celebrated in parts of the Middle East today (218). While in the eyes of the West, Saladin was a more prominent figure and experienced greater victories, only recently did he gain the fame commanded by the Sultan Baybars in the Middle East.

It is reasonable to expect that a seemingly important event in a region’s history would be recorded and remembered through works of history and literature. Thus the scarcity of Middle Eastern materials that bear testament to the Crusades and the failure of the culture to assign distinctive names to these conflicts support the argument that until recently the Crusades were not perceived as a significant part of the history of the Middle East in any respect. In addition, Saladin, the man who has recently been presented as a great leader of jihad against the invading Western forces, was marginalized until his popularity was reestablished by interested Europeans like Kaiser Wilhelm and Western scholars who took an interest in the area. It is not difficult to determine that without the influence of Europeans, the Crusades, or the *al-hurub al-salibiyya*, would have remained a remnant of the distant past and would not be a source of propaganda used against the West today.

IV. The Crusades and Modern Propaganda

The interpretation of the Crusades over the centuries has undergone many paradigm shifts. Some leaders like the Russian Tsar Paul I glorified the crusaders and even went so far as to have themselves named the Grand Master of the Hospitallers, which was an organization founded during the period of the Crusades (Knobler 308). Others did not embrace this heroic interpretation of the Crusades; indeed, some historians from the 18th century went so far as to suggest that “the Crusades of the Middle Ages were little more than the fanatical hate mongering of an unenlightened time” (Knobler 293). In his famous *The Decline and Fall of the Roman Empire*, Edward Gibbon furthered this rhetoric by presenting an even harsher judgment of the Crusades, calling them a phenomenon of “savage fanaticism” (qtd. in Knobler 308). Regardless of the interpretation of the historical record of events that oc-

curred during the Crusades, in the recent past those events have been used to advance political objectives.

With various elements of Islamic radicalism declaring the continuing jihad against the supposedly still crusading imperial West, it is critical to gain an understanding of the history of the Crusades and what impact they are having on the world today. In addition to Osama bin Laden and his Al Quada terrorist network, other prominent individuals like Saddam Hussein have referred to the Crusades in order to support their aggressive stance towards the West, especially the United States. The events from 1099 and onward have become a part of the mainstream terrorist rhetoric, but as presented in this paper, this interpretation of history is inaccurate. To help clarify what exactly constitutes propaganda, several examples follow to depict exactly how the Crusades have been resurrected to achieve a political agenda today.

How the Crusades have been resurrected to achieve a political agenda today is best illustrated by the rhetoric of Osama bin-Laden. Well before his terrorist organization, Al Quada, carried out the September 11, 2001, attacks on the United States, he was delivering anti-American tirades referring to the Crusades. Osama bin-Laden's Declaration of Jihad, issued on February 23, 1998, called for the destruction of the "Jews and Crusaders" ("Osama"). He also stated, "The Arabian Peninsula has never—since God made it flat, created its desert, and encircled it with seas—been stormed by any forces like the crusader armies now spreading in it like locusts" ("Osama"). Not only does this declaration call for the destruction of the invading military forces, but it also declares "the ruling to kill the Americans and their allies—civilians and military—is an individual duty for every Muslim" ("Osama"). The rage felt against America is evident, but what would cause such rage? While the answer is complicated, his interpretation of the events of the Crusades undoubtedly contributes. An example of his distorted view is present in his implication of a Crusaders-Jews alliance, which may have substance as code language for "Americans-Israelis" but is exceedingly inaccurate historically. Shlomo Eidelberg, in his translation of primary rabbinic writings during the First and Second Crusades, sheds light on the horrible plight of the Jews during the time period, and how much they suffered at the hands of the Crusaders. As has been presented, Osama bin-Laden fails to incorporate any history other than that which is politically convenient for him. He sees the present wars as modern Crusades, yet he does not recognize that the West is very different today than in medieval times and may in fact have other political motivations. Furthermore, the Christian church has only a minute fraction of the power that it once had. The modern nation states of the West and the United States of America are secular and arguably would not allow the religious elements of their societies to dictate their foreign policy. A Crusader-Zionist alliance does not exist, and the notion that the wars fought in the Middle East area, whether for good or ill, are a continuation of the European crusading movement is simply false. However, although Osama bin-Laden's interpretation of the facts is highly inaccurate, he and other Islamic leaders still wield great influence and are adept at altering an individual's perception and framing public opinion.

V. Conclusion

The Crusades have been represented as an aggressive conflict spurred on by the fanatical preaching of the papacy and the Christian church in general. In contrast, this paper has demonstrated that the Crusades did not arise in a vacuum, nor were they a spontaneous

expression of violence for the sole purpose of eradicating Muslims. Rather, they were an outgrowth of the long history of conflict that existed between the expansion of Islam and areas that practiced Christianity. Furthermore, it is quite inaccurate to point to the Crusades as a radically violent method and escalation of warfare, when Arab armies had been performing similar atrocities and engaging in violent conflicts for hundreds of years prior to the Crusades.

The events and results of the Crusades have been preserved in the West and have contributed to the development of Western culture. Although in recent history the Crusades have been depicted as historically significant in the Middle East, this was not the case until relatively recently. The fact that a term distinguishing the Crusades from any other conflict was not designated until the 19th century and that few historical works were published until that time supports the conclusion that these conflicts did not significantly impact the area.

Recently, prominent figures in the Middle East have drawn upon crusader imagery to further their political objectives. Osama bin-Laden and Saddam Hussein are two such personalities who have drawn upon Saladin as well as other crusader symbolism. Interestingly enough, Saladin was historically marginalized because of his transitory accomplishments and Kurdish ethnicity. Yet, due to the involvement of Europeans, who glorified Saladin as a model of chivalry, his heroic status was rekindled in the history books of the Middle East. As a result of the insignificance of the Crusades in the region, the failure to consider causative events, and the general historical distortion of the Crusades as being uniquely violent, drawing upon Crusader rhetoric and symbolism is an illegitimate and historically inaccurate method of framing public opinion.

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The Influence of Zoroastrianism on Christian Eschatology

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Countless societies, cultures and religions have attempted to explain and understand death, dying, and the afterlife. A review of the wide range of eschatological explanations for these “last things” in life, clear similarities and connections between certain religions emerge. This essay will deal with one such connection—the connection between Zoroastrian eschatology and Christian eschatology. Although Judaism and Christianity are two separate religions, it would be foolish to analyze the development of Christian thought without also taking into account the fact that Christianity grew out of Judaism. Therefore, this essay will deal not only with how Zoroastrianism influenced Christian beliefs about the afterlife but also with the role of Jewish eschatology in shaping modern Christian beliefs about death and dying.

Zoroastrianism is one of the oldest monotheistic religions in the world. Founded by Zoroaster (also called Zarathustra) in present-day Iran more than 3500 years ago, it was the official religion of the Persian Empire from 600 BCE to 650 CE, making it one of the most powerful religions in the world during that period (“Religion & Ethics”). It is relatively unheard of today, as it has only about 250,000 followers in the world, with the majority living in India and Iran. Zoroastrians believe in one God called Ahura Mazda, or

“Wise Lord,” who created the world and revealed his truth through the prophet Zoroaster. They also believe in the hostile spirit Angra Mainyu, who, though not the equal of Ahura Mazda, exists in opposition to the Holy Spirit of Ahura Mazda, Spenta Mainyu. The exact relationship between Ahura Mazda and Spenta Mainyu is hard to determine from Zoroastrian sacred texts, but Spenta Mainyu is best described as “a divine attribute of Ahura Mazda” (Nigosian 74). Therefore, the cosmic dualism of Zoroastrianism is not that of two equal Gods, one good and one evil, but of one all-powerful God whose creative energy, Spenta Mainyu, is opposed by a destructive energy, Angra Mainyu, much like the Holy Spirit and Satan in Christianity (“Religion & Ethics”).

The influence of Zoroastrian eschatology on Christian eschatology began long before the time of Christ with the faith that Christianity sprang from—Judaism, and specifically, pre-exilic Judaism. Like all other Ancient Near Eastern cultures, the ancient Israelites held beliefs about what happened to the body and the soul once a person died. Most Ancient Near Eastern groups, such as the Mesopotamians, Ugarits, and Egyptians, held detailed beliefs about individual eschatology, giving descriptions of the soul’s descent to the underworld in works such as the Gilgamesh epic, *The Descent of Ishtar*, and the Egyptian *Book of the Dead*. As scholar Philip Johnston notes, these societies were very concerned with life after death, and it showed in their literature (69).

Israel’s literature, however, stands in stark contrast to the afterlife-preoccupied writings of other Ancient Near Eastern groups; there is no description of descent to or ascent from the underworld in the Hebrew Bible, nor is there a detailed description of the underworld itself. Johnston says that although the Hebrew root word for death is used more than one thousand times in the Hebrew Scriptures, the underworld is only referenced about one hundred times, making it a very minor Old Testament theme. He adds that the most frequently used Hebrew word for the underworld, “Sheol,” is used sixty-six times in the Old Testament, and even in these instances, exact and consistent descriptions of the purpose of Sheol and its inhabitants are not found. When Sheol is described in the Old Testament, it is generally said to be a dark place, and its inhabitants are inactive and silent (Johnston 69-76).

Determining the concept of Sheol and its inhabitants is difficult since many passages are contradictory. Johnston discusses some of these conflicting concepts. One common understanding among Christians is that Sheol is synonymous with Hell or Hades, as it is translated in the King James Bible. This belief, however, is incorrect in that it ignores the fact that the Old Testament never describes Sheol as a place of punishment, as Hell is described in the New Testament. In fact, several prominent and respected Old Testament figures such as Jacob, Job, Hezekiah, and one of the Psalmists anticipate going to Sheol (Johnston 73, 81). Another view of the afterlife says that Sheol is “a common fate of all the dead” and is a dark and gloomy place (Bauckham 14). This belief is also problematic, as for the most part the righteous people in the Old Testament do not speak about going to Sheol after they die, or anywhere for that matter. Yet another view of Sheol is that it means “grave” when referring to the righteous and “underworld” when referring to the wicked because it is doctrinally incorrect for the good and the bad to have the same afterlife destiny. Johnston says that just like the other interpretations, this argument is problematic because it ignores Biblical passages where inhabitants of Sheol speak, like Isaiah 14:10 and Ezekiel 32:21, and passages in which different definitions of “Sheol” would be required within the same passage, such as Isaiah 14:11- 15. Another attempt to explain the meaning of “Sheol”

says that the term always means “grave.” This definition does not work either. Texts such as Deuteronomy 32:22 require the translation “realm of death” as opposed to “realm of the grave” (Johnston 73-75).

Given the many conflicting representations of Sheol, how can one understand the Jewish view of the afterlife? As in any society and religion, the writers of the Old Testament probably had different understandings of the tenets of their faith and represented different groups within Judaism. Therefore, it makes sense that they would describe Sheol in different ways. The great majority of Old Testament references to Sheol describe it as a place for

[S]heol is never used in the Old Testament in connection with someone who is dying after a happy and fulfilled life.

the wicked. In the few instances when the name is used in connection with a righteous person or as a generic destination for all people, either the person faces an unhappy or untimely death and interprets it as punishment from God, or life is described as wicked or meaningless. The word is never used in the Old Testament in connection with someone who is

dying after a happy and fulfilled life (Johnston 81-82). This overview of usage leaves us in an interesting position concerning Jewish views of the afterlife. If most Jews believed that Sheol was a place for the wicked, then the pre-exilic Israelites show no evidence of having a concept of an afterlife for those who were righteous, or at least they did not focus on it enough to merit mention in their Scriptures.

The Old Testament continues to support this view of the afterlife up until the time of the Exilic and Post-Exilic periods. The Exilic period began in 587 BCE, when the inhabitants of Judah and Jerusalem were forced to migrate from their native homes to Babylon after their defeat at the hands of Nebuchadnezzar. It is possible that during this time the Israelites first came into contact with Zoroastrianism (Nigosian 96), though some scholars disagree with this conjecture. For example, Mary Boyce says that Zoroastrianism did not “enter history” until the time of the Persian Empire during the Post-Exilic era (1171). Whether the Jews were first introduced to Zoroastrianism during the time of Babylonian captivity or during the height of the Persian Empire, evidence suggests that the majority of Zoroastrian influence occurred during the reign of Persia in the Post-exilic period (Kriwaczek 195).

Darius, the king of Persia from 522-486 BCE and well-known character in the Bible, is believed to have been a devout follower of Zoroastrianism (Tullock 310). An inscription cut into the side of a cliff above one of the main roads of the Persian Empire and next to a depiction of Darius's victories while king states: “Ahura Mazda bestowed the kingdom upon me; Ahura Mazda bore me aid until I took possession of the kingdom; by the favour of Ahura Mazda I hold the kingdom” (Kriwaczek 186). Darius's clear tribute to Ahura Mazda shows the hold that Zoroastrianism had on the Persian Empire during the Jews' captivity.

King Cyrus was also likely a follower of Zoroastrianism, given the Zoroastrian symbols found on his tomb (Kriwaczek 175).

Had the Jews been severely oppressed by the Persians, they would likely have rebelled as they did against the Egyptians, and they would have strengthened their resolve against other religions. However, the Jewish people had a very friendly, intimate connection with the Persian leaders. Biblical figures such as Ezra, Nehemiah, and Mordecai were important members of the Persian court, and Esther even became the queen of Ahasuerus, the king of the Persian Empire. Paul Kriwaczek remarks that given these close relations, it would have been surprising if some Zoroastrian theology, and specifically eschatological theology, had not found its way into the Jewish mindset (195).

During this time of close Persian-Jewish relations, Kriwaczek continues, ideas that had been “noticeably absent” from Pre-Exilic Old Testament books started to become part of the mainstream Jewish religion: “life after death, resurrection, eternal reward and punishment, and the existence of Heaven, imagined as a garden” (197). Concerning the afterlife, Zoroastrians believed that on the third day after a person’s death, the soul departed from the body and ascended to a sacred mountain where good and bad deeds were weighed (Johnston 234). If good dominated, then the soul would be able to cross the Chinvat bridge into heaven, or paradise. If bad dominated, then the soul would plunge into the underworld, the “place of worst existence” for punishment (Boyce 1170). At the end of time, there would be a bodily resurrection of all people and a second and final judgment. Those who were judged to be good in this final judgment would move on to “eternal bliss on a restored earth” while those who were judged to be wicked would perish completely (Johnston 234).

Comparing this version of death, dying, and the end times to what is found in the Old Testament reveals almost no similarities between the Jewish concept of Sheol and the Zoroastrian concept of paradise, punishment, and a final judgment. However, anyone familiar with Christian beliefs about the afterlife and end times can see that Zoroastrian eschatology is similar to Christian eschatology. This is curious since half of Christianity’s sacred literature is also Judaism’s sacred literature. In most Protestant Christian beliefs, the soul departs from the body immediately after death and goes either to heaven or hell. The soul goes to heaven if the person has experienced salvation through Jesus Christ, making him/her righteous and therefore able to enter the realm of Heaven. The person who is not saved, however, is still in a wicked state, and therefore the soul departs to hell. Some Christian groups also believe that after the time of tribulation, the known world will come to an end, followed by a resurrection of all people and a second judgment. At the second judgment, the Devil, his demons, and all the wicked will be cast in the lake of fire while the righteous will be with Christ for the millennial reign on the new earth.

The majority of the Old Testament has nothing resembling either Zoroastrian or Christian eschatology at all. However, in some of the later prophetic literature and in the intertestamental books, which consist of the Apocrypha and Pseudepigrapha, a few similar ideas begin to appear. Kriwaczek notes that in the book of Job, the figure of Satan, from the Hebrew *Ha-Satan*, meaning “the adversary,” first appears, paralleling the evil force in Zoroastrianism, Angra Mainyu, mentioned in the brief summary of Zoroastrianism at the beginning of this paper (197). Satan is the same figure who later becomes the ruler of hell in Christian eschatology. Johnston says that in the book of Daniel, in addition to referencing the concept of Satan, the author speaks of the dead awakening to arise from the dust of the

earth and a final judgment, ideas similar to those of the resurrection and final judgment seen in Zoroastrianism (224).

Lloyd Applegate concludes that while Zoroastrian eschatology made some impact on Jewish views of Satan and the resurrection, Christianity latched on to many more Zoroastrian ideas (5). Both Christians and Zoroastrians believe that a person's deeds on earth will determine his/her placement in the afterlife. In Zoroastrianism, S. A. Nigosian says, the righteous enter paradise at death, which is described as a place of "beauty, light, pleasant scent, and bliss,"

Both Christians and Zoroastrians believe that a person's deeds on earth will determine his/her placement in the afterlife.

an idea very similar to the Christian idea of heaven. The wicked are sent to the underworld, which is full of "horror, misery, darkness, evil smells, and suffering," much like the hell of Christian eschatology (92). As noted above, Zoroastrianism is also congruent with Christianity in its belief in a single, all-powerful God with an evil spirit that opposes God. Both

Christians and Zoroastrians believe that at the end of time there will be a bodily resurrection and a second and final judgment that will send righteous souls to live for eternity in a restored and perfected earth (Johnston 234). Finally, both Christians and Zoroastrians believe in a world savior, born in a miraculous virgin birth (Boyce 1171).

While it seems that Zoroastrian-influenced Jewish scriptures had some impact on the Zoroastrian ideals in Christianity, the Old Testament could not have been the only way in which Zoroastrianism was introduced into Christianity. Zoroastrianism must have been a strong part of the culture, a theory that history and archaeology support. One indication that Zoroastrianism made an impact on Christianity is in one of the first and most important accounts of Christianity: the birth of Jesus. Boyce argues that the Magi who were said to have come to worship Jesus and bring him gifts were likely Zoroastrian priests, a group that would follow Persian rulers, soldiers, and settlers throughout the Ancient Near East (1171). However, many followers of Zoroastrianism saw their faith as unique to Iran, and therefore probably made few proselytistic efforts. If proselytization was not a significant part of Zoroastrian practices, then followers of this faith must have been more prominent in the time of the intertestamental period and the early Christian church than has been suggested in the past. In fact, scholars have found that Zoroastrianism was enthusiastically discussed in the Athenian Academy and that Zoroastrian dualism influenced the "struggle between the good and evil world-souls" in Plato's *Laws* (Dannenfeldt 7-8). Although past historians believed that Zoroastrianism was mostly confined to Iran after the reign of Alexander the Great, new evidence shows that the religion flourished under Greek rule until the rise of Islam in the 7th century (Boyce 1172). Given this information, Zoroastrianism no doubt had a great influence on Christian eschatology, as Zoroastrianism actually influenced the culture

of the entire Eastern world in many ways. Perhaps nowhere is the influence on Christianity seen more than in eschatology.

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The Making of *Elegance*

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In order to demonstrate an understanding of the theoretical basis for this sculpture, titled *Elegance*, I will first describe the physical aspects of and technical methods used for this piece. Second, I will discuss the elements and principles of design utilized.

Standing at nearly six feet, this piece is composed mainly of plywood, with the exception of the ball-like form near the top made of western red cedar. With this in mind, please review the piece now before I reveal the methods of construction.

Due to the massive nature of the piece, it was constructed in three separate parts—base, dish, and ball—that are easily assembled. This feature of construction provides for safer and easier transportation. A simple dowel joint is used to attach the ball-like form to the dish. A mortise was cut into the bottom of the dish to match the shape and angle of the base's neck, which acts as the tenon for this same joint.

All three parts were constructed in the same fashion. Multiple planes were cut on a band saw into the desired shape. After the middle plane was cut, each subsequent plane was attached with drywall screws and glue. This was the additive process of sculpture known as modeling. Once the form was complete, a grinder was used to knock off all the corners and create clean transitions between planes, resulting in a more unified form. This stage is



the subtractive process of sculpture known as carving. Finally, the parts were sanded and coated with Watco Danish Oil to seal the wood and bring out its natural color.

In designing this sculpture, I wanted a floor piece that would fit comfortably in any gallery or home. For this reason I decided to keep a relatively small footprint. From there, a vertical, organic base came very naturally. This controlled yet free-flowing nature of the base suits the medium well. The gentle taper from a massive bottom to the slender neck on the base is enhanced by the grain of the wood, which creates a strong directional flow up toward the dish and ball.

The gentle angle at which the dish meets the neck of the base makes the piece more dynamic in the way that it occupies space. A vertical dish would create a two-sided sculpture, and a horizontal dish would be at an awkward eye level for most viewers. The diagonal was much more effective in its presentation of a sculpture in the round.

The ball-like form is the obvious focal point for three reasons: it is at eye level with the viewer, it is a different, darker wood that contrasts with the light wood in the rest of the piece, and it seems to be poised in a vulnerable state. This emphasis leads the viewer's eye from the ball, to the dish, and down through the neck to the base, then back again. Over all, the three parts work together well and allow for a well-balanced composition and a free-standing floor piece. For these reasons, I believe this sculpture is aesthetically pleasing and very successful.

Explicit and Implicit Prejudice Towards Persons with Physical Disabilities

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Abstract

The relationship between implicit and explicit attitudes towards persons with physical disabilities, and the predictive validity of contact, social desirability, and gender on these attitudes, was investigated. Variables were measured using the computer-based Disabled-Abled Implicit Association Test, Attitudes Toward Disabled Persons Scale Form O, Contact with Disabled Persons Scale, and the Marlowe-Crowne Social Desirability Scale Form C. Participants were 42 undergraduates. Correlation coefficients indicated that explicit and implicit attitudes were not significantly correlated ($p = .17$), that contact significantly predicted implicit attitudes ($p = .02$), but not explicit attitudes ($p = .36$), and that social desirability predicted neither attitude type. Gender significantly predicted implicit ($p = .03$), but not explicit attitudes ($p = .79$), with females possessing less negativity.

The need for an accurate theoretical framework of implicit and explicit attitudes towards persons with physical disabilities is essential in furthering our understanding of the widespread negativity towards them. This area has received little attention compared

to the dominant interest in race and gender attitudes (Nosek & Smith, et al., 2007), despite the empirical finding that attitudes towards individuals with physical disabilities are equally negative evaluations and receive more negativity than those with other types of disabilities (Strohmer, Grand, & Purcell, 1984). Additionally, research measuring both explicit and implicit attitudes towards this population is scarce and has either employed implicit measures of low validity, and/or a participant population that is dissimilar from the general public.

An increased knowledge of implicit attitudes is crucial because, despite possessing egalitarian beliefs, individuals may have an implicit negative attitude (Pruett & Chan, 2006) that can involuntarily effect behavior (Perugini, 2005; Hoffman, Gawronski, Gschwendner,

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Le & Schmitt, 2005). Greenwald and Banaji (1998) define implicit effects as, “those that influence participants’ thoughts or behaviors in a way that...operate[s] outside of conscious awareness,” as opposed to explicit processes which require conscious thought (DeCoster, Banner, Smith & Semin,

2006). Therefore, implicit beliefs are difficult to modify using traditional prejudice reducing techniques which target explicit processes and behavior (Dasgupta & Greenwald, 1993; Park, Faulkner, & Schaller, 2003). A more thorough understanding of negative implicit attitude formation towards persons with physical disabilities is necessary before effective modification strategies can be developed.

A number of studies have found that implicit and explicit attitudes were not significantly correlated (DeCoster, et al., 2006; Hofmann, et al., 2005; Lane, Banaji, Nosek, & Greenwald, 2007; Nosek, Greenwald & Banaji, 2005; Nosek & Smith, et al., 2007; Olson & Fazio, 2003; Park et al., 2003; Pruett & Chan, 2006), which initially spurred debate regarding the nature of implicit attitudes. Traditionally, researchers perceived implicit measures as more objective indicators of attitudes and beliefs, due to the relative difficulty in response manipulation (Hofmann et al.). However, further research involving brain wave activity, attitude formation processes, and behavior prediction models led to more accurate theoretical models of implicit attitudes (DeCoster et al.).

Most evidence supports the dual-processes theory (DeCoster et al., 2006; Hofmann et al., 2005; Olson & Pazio, 2003; Perugini, 2005), which was first proposed by Wilson, Lindsey, and Schooler (2000). This theory suggests that the attitude types are two related, yet separate, constructs, which exist to serve different purposes in decision making. Implicit knowledge is derived from simple associations and is utilized during automatic decision-making, while explicit knowledge is derived from simple associations and contextually dependent memories, and is utilized when time is available critical analysis of the stimuli or situation. Thus, implicit and explicit thoughts do not necessarily have to be identical or even similar to one another; attitude correspondence is actually unlikely due to differing

formation processes and separate neural-storage locations (DeCoster, et al.; Dasgupta & Greenwald, 2003; Hofmann et al.). In fact, the inability of the implicit thought process to encompass contextually dependent experiences necessary to form accurate mental representations of complex stimuli results in the tendency for implicit processes to form generalizations about social groups based on simple frequent associations. These potentially inaccurate beliefs linger, despite our increasingly egalitarian worldview, due to the inability of explicit knowledge to effect implicit attitude formation.

The primary purpose of this research is to improve upon previous studies by utilizing a more effective implicit attitude measure and testing a non-specialized population. The first hypothesis is that implicit and explicit attitudes will not be statistically correlated, which has been documented in previous investigations of attitudes towards persons with physical disabilities (Pruett & Chan, 2006; Park et al., 2003; Nosek & Smith, et al., 2007). The second hypothesis is that the demographic variables of gender, having a disability oneself, and having a family member with a disability will not have a statistically significant effect on either attitude type. Although some research attests to the ability of gender to predict explicit attitudes towards persons with physical disabilities (Hergenrather & Rhodes, 2007), other research suggests that this effect is usually insignificant. Although it would seem intuitive that individuals who possess a disability themselves would exhibit less negativity towards this population, previous research suggests that this effect is also negligible (Nosek & Smith, et al.). While having a family member with a disability may increase the quantity of contact with this population, it does not significantly predict attitudes due to the extreme variability in the quality and implications of this context between individuals (Caldwell, 2007; Strohmmer et al., 1984).

The final hypothesis is that contact will significantly predict the direction participants' implicit and explicit attitudes towards persons with physical disabilities. An extensive amount of literature exists on the predictive validity of contact on attitudes towards minority groups in general (Brown, 2007; Allport, 1954), and persons with physical disabilities specifically (Hergenrather & Rhodes, 2007; Yuker & Hurley, 1987; Pruett & Chan, 2006). Additionally, it is predicted that the predictive validity of contact will be stronger in relation to implicit attitudes, which has been previously observed (Pruett & Chan).

Method

Participants

Participants were 42 undergraduates enrolled in an introductory psychology course at Northern Kentucky University. Sixty-two percent of participants were female (26), with an overall mean age of 19.4. Students received course credit for their participation. A spoken explanation of the study, including a description of the tasks involved, the duration of participation, and compensation for participation, was announced during class prior to the distribution of a list of individual appointments that participants chose from.

Measures

Explicit Measures

The Contact with Disabled Persons Scale (CDPS) uses 20 items with five likert-scale

response options to measure the quantity and quality of participants' prior contact with individuals who have physical disabilities (Yuker & Hurley, 1987). Items reflect a broad range of activities, involving variable interpersonal relationships. Response categories range from never to very often. Three of the response options are numerically undefined because perceived subjective frequency demonstrates higher reliability in this measure than specific numerical responses (Yuker & Hurley). Scores range from 20 to 100, with higher scores indicating a greater extent of contact.

The Marlowe-Crowne Social Desirability Scale Form-C (MCSDS-C; Crowne & Marlowe, 1960) is a 13-item version of the original MCSDS and is one of the most reputable social desirability scales (Reynolds, 1982). Items consist of true or false questions regarding behaviors and thoughts that are socially desirable, yet unlikely in practice. Scores range from 13 to 26, with higher scores indicating a higher social desirability response tendency. The Attitudes Towards Disabled Persons Scale Form O (ATDPS-O) is the most widely used explicit measure of attitudes towards persons with disabilities (Pruett & Chan, 2006; Horne, 1985). It contains 20 items and six likert-scale response options ranging from disagree very much (-3) to agree very much (+3) and is designed to measure the degree of egalitarianism in respondents views towards persons with physical disabilities (Yuker & Block, 1987). Scores range from 0 to 120, with higher scores indicating more positivity (Yuker & Hurley, 1987).

Implicit Measure

Previous measures of implicit attitude used a variety of data collection techniques such as unobtrusive behavioral observations, projective measures, and physiological data. In response to emerging reliability and validity concerns regarding these assessment

**[The IAT] also possesses
higher construct and
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values.**

techniques, more accurate measures were created such as the Bona-fide Pipeline (Olson & Fazio, 2003) and the particularly impressive Implicit Association Test (IAT; Greenwald et al., 1998). The IAT is currently the most widely used measure of implicit associations and demonstrates higher reliability than its competitors (Hoffmann et

al., 2005). It also possesses higher construct and predictive validity, internal consistency, and test-retest values (Perugini, 2005).

In the Disabled Abled Implicit Association Test (DA-IAT), a participant responds to a series of picture or word stimuli, (exemplars), that they classify into four categories; two representing the concept discrimination of disabled versus abled and two representing the attribute discrimination of good versus bad. The participant is then asked to respond rapidly with a right-hand key press to exemplars representing one concept and one attribute (e.g.,

disabled and good), and with a left-hand key press to items from the remaining two categories (e.g., abled and bad). Afterwards, the participant performs the same task after the category pairs have been switched (such that abled and good share a response, and disabled and bad share a response). Implicit associations are interpreted in terms of association strengths under the assumption that participants respond faster when the concept and attribute are strongly associated (e.g., abled and good) than when they are weakly associated (e.g., abled and bad).

The DA-IAT is not currently available for use in research; however, the original version is available for review on the Project Implicit at Harvard University website (Nosek, Greenwald, & Banaji, 2007). In order to obtain this measure, Millisecond Implicit Software was utilized to duplicate the pre-existing version using a generic picture-IAT script (Greenwald, 2007), identical picture and word stimuli (Nosek & Greenwald et al.), permission from the creator, and an IAT construction manual (Lane et al., 2007).

Specifically, the DA-IAT consists of seven blocks of response trials with the following categorization rules: (B1) 20 trials sorting the concept exemplars; (B2) 20 trials sorting the attribute exemplars; (B3) 20 trials sorting all four exemplar types, with one concept category and one attribute category sharing a response key and the remaining categories sharing the other response key; (B4) 40 trials using the same sorting rules as B3; (B5) 40 trials sorting the concept exemplars as in B1, but with the category associations reversed; (B6) 20 trials sorting the exemplars in B3, but with the category associations reversed, and (B7) 40 trials using the same sorting rules as B6 (Lane et al., 2007). Participants are required to provide the correct response following a categorization error in order to incorporate error rates in scoring, which is based on mean response latencies. The order of the attribute/exemplar association presented first was alternated between participants to eliminate previously documented order-effects (Lane et al.).

The IAT has traditionally been scored using the conventional algorithm; however, scores in this study were obtained using the improved algorithm, which has been shown to more accurately assess association strengths, relations between association strengths and independent variables, and to reduce response tendency effects (Greenwald, Banaji, & Nosek, 2003). Specifically, trials with latencies above 10,000 ms and participants for whom more than 10% of trials had latency rates less than 300 ms were to be excluded from analysis; however, neither qualification for exclusion was met in this study. Next, the difference between the mean latencies of all trials in the practice disabled-good/abled-bad block and the practice disabled-bad/abled-good block are divided by the pooled standard deviation of all trials in both blocks. The same computation was obtained using the test blocks. Finally, the two quotients were averaged to produce a *d* score ranging from -2 to positive 2, with higher scores reflecting greater negativity.

Procedure

Participants first reviewed previously administered information regarding the study and signed an informed consent form before completing the measures in the following order; MCSDS-C, ATPDS-O, CDPS, and the demographics survey. The order of these measures was chosen at random because order effects have not been discovered when both types of attitude measures are used in the same study (Hofmann et al., 2005). Precise directions, partially derived from instructions provided from the creators of the IAT (Nosek

& Greenwald et al, 2007), were provided by the experimenter after the explicit measures were completed. Additionally, a printed document was presented which demonstrated the category associations for all exemplars. Although participants had an unlimited amount of time to view this form, it was removed during testing to prevent artificial inflation of response latencies that could potentially occur if participants consulted the form to improve response accuracy. Afterwards, participants were debriefed on the purpose and theoretical background of the IAT and were asked to refrain from disclosing information about this study to potential participants.

Results

Analysis

Descriptive statistics were computed to determine participants' degree of implicit and explicit negativity towards the population in question. Correlation coefficients were computed to determine the correlation strength between the attitude types to determine the predictive ability of the social desirability and contact variable on participants' attitudes. A series of independent samples t-tests were computed to determine the predictive validity of gender, having a disability oneself, and having a family member with a disability on both attitude types.

Descriptive Statistics

The mean scores on the DA-IAT reflect a mild amount of negativity, ($d = .90$), which is comparable to a previous study using this measure, ($d = 1.05$; Nosek, et al., 2007). Results on the ATDP-O indicate a strong amount of negativity ($M = 40.17$, $SD = 17.08$), which was not easily comparable to previous studies due to the utilization of non-equivalent forms of this measure.

Correlations

Correlation coefficients were computed to assess the relationship between explicit and implicit attitudes, as well as the predictive validity of the contact and social desirability variables. Explicit and implicit attitudes were not significantly correlated, $r(40) = -.15$, $p = .17$, which supports the hypothesis. Social desirability did not predict implicit, $r(40) = -.03$, $p = .42$, or explicit attitudes, $r(40) = .04$, $p = .41$, which also supports the hypothesis. The contact variable significantly predicted implicit attitudes, $r(40) = -.33$, $p = .02$, but not explicit attitudes, $r(40) = .06$, $p = .36$, which was somewhat contrary to the hypothesis.

T- tests

Independent samples t-tests were conducted to assess the effect of the remaining variables of gender, having a disability oneself and having a family member with a disability on attitude scores. Having a disability oneself did not significantly predict explicit, $t(40) = .06$, $p = .96$, or implicit attitudes, $t(40) = -1.63$, $p = .11$, nor did having a family member with a disability predict explicit, $t(40) = .93$, $p = .36$, or implicit attitudes, $t(40) = 1.95$, $p = .06$. Gender did not predict explicit attitudes, $t(40) = -.26$, $p = .79$, but did predict implicit attitudes, $t(40) = 2.24$, $p = .03$, with a 95% confidence interval for the difference in means ranging from .02 to .44. The eta squared index indicated that 11% of the variance in implicit scores was accounted for by gender, with females exhibiting a lower amount of prejudice ($M = .82$, $SD = .36$) than males ($M = 1.05$, $SD = .27$).

Discussion

Mean DA-IAT scores were more negative in this study than a previous investigation conducted by Pruett and Chan (2006), which suggests that the specialized participant population of rehabilitation students/professionals, who were utilized in their study, may possess differing ideologies than the general public. This discrepancy may lead to inaccuracies when generalizing results from studies utilizing this participant population to the public at large. The general negativity across participants in this study supports existing evidence that implicit and explicit attitudes towards persons with physical disabilities are negative in the general population.

[Tests] determine[d] the predictive validity of gender, having a disability oneself, and having a family member with a disability.

As the hypothesis predicted, explicit and implicit attitudes were not significantly correlated, which supports previous evidence that attitudes towards persons with physical disabilities are similar to attitudes towards other minority groups. Additionally, social desirability did not predict either attitude type, which also supports the hypothesis and indicates that scores were not affected by this response tendency. Furthermore, the observation that implicit scores were not affected may suggest that the relatively new DA-IAT shares the validity of more established IAT's and that implicit attitudes towards persons with physical disabilities are similar to those of other minority groups.

Contact significantly predicted implicit attitudes, but not explicit attitudes, which was somewhat contrary to the hypothesis that although contact would have a greater impact on implicit scores, both attitude types would be predicted. Many studies finding contact with persons with disabilities to predict explicit attitude used a participant population consisting of rehabilitation students/professionals, so this discrepancy further suggests that this population may possess differing ideologies than the general public. This insignificant correlation could also be explained by the contact measure itself, which is unidimensional in nature. Much research supports the multi-dimensionality hypothesis, which states that the type of contact experienced with persons with physical disabilities may be more predictive of attitudes than the extent of contact alone (Caldwell, 2007; Strohmer et al., 1984). The fact that having a physical disability oneself and having a family member with a disability both failed to predict either attitude type in this study, despite causing increases in unidimensional contact, also lends support to the multi-dimensionality hypotheses.

Gender predicted implicit, but not explicit scores, which was somewhat contrary to the hypothesis. Some researchers attribute this gender bias to the increased desire in women to appear socially desirable, while others suggest that this relationship is caused by their higher ability to emphasize. The fact that women exhibited less implicit prejudice than

males may suggest that innate or implicit gender differences may exist. If this is the case, these variables could be mediating the relationship between gender and explicit prejudice, which may explain why empirical research on this topic often varies dramatically depending on experimental methodology.

The majority of the research findings support limited previous research and suggest that relationships between implicit and explicit attitudes towards this population are similar to those towards other minority groups. The results have also brought up concerns regarding the ability to generalize findings of studies utilizing the rehabilitation student/professional participant population. Additional research using a multidimensional measure of contact is necessary to determine the complex relationship between contact and both implicit and explicit attitude negativity. Further research is also needed to determine the precise gender differences resulting in differing degrees of negativity towards persons with physical disabilities and other minority groups. An analysis of previous studies investigating the effect of gender on prejudice levels is also necessary to determine if this variability results from the unintentional ability of some attitude measures to tap into implicit attitudes in addition to explicit attitudes.

The primary limitation of this study was the relatively small sample size. The time-consuming procedure and the costly specialized software necessary to obtain the implicit measure created a high resource investment per participant. A new version of the Implicit software is now available that posts IAT's onto a web page and enables multiple participants to take the IAT simultaneously. Further research could utilize this software in order to obtain a larger sample size. Another limitation was the lack of empirically tested explicit attitude measures of negativity towards persons with physical disabilities. Although the ATDP-O is one of the most reputable and widely used measures, it has received some criticism for being outdated due to changes in societal laws and norms regarding persons with physical disabilities. Several other explicit measures of attitude exist, but they do not share the reputation and frequency of use that the ATDP-O has accumulated. An updated version of the ATDP, or the creation of a similar measure with comparable validity and reliability, would be highly useful in future research.

Table 1

Correlations between Attitude Measures, Social Desirability and Contact

Attitude measure	Variable	Correlation coefficient	p value
IAT	ATPDS	$r = -.15$	$p = .17$
	Social Desirability	$r = -.03$	$p = .42$
	Contact Score	$r = -.33$	$p = .02$
ATPDS	IAT	$r = .15$	$p = .17$
	Social Desirability	$r = .04$	$p = .41$
	Contact Score	$r = .06$	$p = .36$

Note: Correlation is significant at the .05 level (one-tailed).

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“*Long Live Freedom*”: The White Rose, 1942-43

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Early one morning, late in February of 1943, three young people stood in a hallway smoking cigarettes. There was nothing remarkable about the scene, except for the presence of uniformed guards standing at the fringes of the little group. The trio showed no signs of fear or panic; they quietly continued smoking, perfectly composed. Suddenly, one of them broke the silence. His name was Christoph Probst, a medical student and father of three. “Well,” he said, “in only a few minutes we shall be seeing each other again. In eternity...I did not know dying could be so easy” (qtd. in Hanser 284). His two companions, siblings Hans and Sophie Scholl, said nothing. A door opened at the end of the hall, revealing a courtyard and an unmarked building outside. The guards led Sophie Scholl away and she followed “without turning a hair, without flinching,” one witness remembered (Hanser 284). She disappeared into that sinister building, where they all knew her executioner waited. They were to die by guillotine, the same instrument that had been implemented so effectively during the French Revolution. Probst followed shortly after Sophie Scholl, and Hans Scholl awaited his own turn.

What had these young people done that demanded so terrible a price? They were members of the White Rose, a non-violent resistance group that sought to undermine Nazi control of Germany. Operating for about a year from 1942 to 1943, the White Rose printed a total of six leaflets, each pointing to the horrors of the Nazi government and condemning the German people for their apathy. Their efforts generated no astounding wave of enthusiasm and sparked no great revolution, and yet the Nazis considered them an extremely threatening force. Nazi officials felt the White Rose and their leaflets jeopardized their hold on the youth of Germany. The Nazis feared the White Rose might pull more young people to their side; this made them dangerous, and the White Rose paid the ultimate penalty.

From the time the Nazi Party seized control of Germany in 1933, the Nazis concentrated on maintaining power. Adolf Hitler, the Nazi dictator of Germany, was particularly concerned with securing the loyalty of the youth of Germany. He firmly believed that “whoever has the youth has the future,” and he went to great lengths to ensure that future was National Socialist (qtd. in Hanser 29). As author Peter Stachura says, the Nazis believed their “most vital responsibility was to erect a system which would indoctrinate German youth in National Socialist philosophy and prepare them physically, ideologically, and mentally for the task of upholding and perpetuating the ‘Thousand Year Reich’” (138).

As a result, Hitler embarked on a massive indoctrination campaign to seduce the youth of Germany. He created the *Hitlerjugend (HJ)*, a paramilitary organization for boys, and the *Bund Deutscher Madel (BDM)* for girls. Hitler now had the vehicles with which he could begin the indoctrination of Germany’s youth and guarantee the continuation of National Socialism into the next generation. *Hitlerjugend* leaders taught children the Nazi rhetoric of race-consciousness, German supremacy, suppression of individuality to the state, loyalty to Hitler and Germany, *Volksgemeinschaft*, and self-sacrifice (Stachura 139). Even children who did not belong to the *HJ* or *BDM* were bombarded with these philosophies through *HJ* films, radio programs, and periodicals. After such a thorough indoctrination, the children were expected to be, in the words of a Nazi spokesman, “proud, upright, healthy...and glowing with the idea of National Socialism,” keenly aware that youth was “the bearer of Germany’s destiny” (qtd. in Stachura 122).

However, in the case of at least five young people, the Nazis’ carefully devised plan for youth indoctrination backfired. Despite the fact that all of them spent their formative years living under the National Socialist state, these individuals grew to detest National Socialism more and more the longer they lived under it. These five young people were Hans and Sophie Scholl, Alexander Schmorell, Christoph Probst, and Willi Graf, and they formed the youth resistance organization known as the White Rose. Though they were all students at the University of Munich, they were by no means homogenous; each had a unique background and unique motivations for resisting National Socialism.

Hans Scholl made one of the most remarkable paths to resistance of any of the members of the White Rose. Scholl was an active member of the *HJ* and had even attained the rank of *Fahnleinführer*, or squad leader, in that organization (Dumbach and Newborn 27). However, he soon discovered that the movement did not welcome individuality. He first came into conflict with *HJ* leadership when he was heard singing Norwegian and Russian ballads at group meetings; he was threatened with punishment unless he stopped. Another incident occurred when one of Scholl’s supervisors caught him reading a banned book, Stefan Zweig’s *Mankind’s Stellar Hours*, which Scholl’s father had somehow obtained

despite censorship. An *HJ* officer tore the book from Scholl's hands, telling him the book was forbidden because the author was a Jew (Dumbach and Newborn 33-34). Hans Scholl's final disillusionment with the *HJ* came when a flag he and his unit had made was wrested away from a young flag bearer by an officer because it represented a violation of uniformity. Scholl rushed to the aid of his beleaguered comrade and struck the youth leader. Scholl was immediately stripped of his rank. He suddenly realized what the youth organizations were about—the elimination of individualism and subjugation to National Socialism.

At the age of 24, Scholl became a dissident, undergoing a transformation from *HJ* group leader to resistance leader. Scholl's father was very pleased at

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this turn of events. He had raised his children in a cultured home where they all enjoyed the arts, philosophy, and reading—even banned books like those of Zweig had found homes on the Scholls' bookcase. Scholl's father taught his children the concept of humanism, or the belief that all people have merit. Coming from such a background, the Scholls would be expected to have no patience for the concept of racial superiority, the practice of sterilization and euthanasia, or the mistreatment of Jews. The Scholl children were taught to stand up for their beliefs. "What I want most of all," their father had told them, "is that you live in uprightness and freedom of spirit, no matter how difficult that proves to be" (qtd. in Scholl 12). He also taught them his favorite quotation by the famous German poet Johann Goethe: "Despite all the powers closing in, hold yourself up" (Dumbach and Newborn 155). This sentiment never left Hans Scholl—he inscribed it on the walls of his prison cell shortly before his death.

Hans Scholl became the ring-leader of the group of friends who formed the White Rose. His right-hand man was Alexander Schmorell. Schmorell was half-German and half-Russian, and although he considered himself German, his friends said he had a "Slavic soul" (Dumbach and Newborn 50). He devoured Russian literature and music and learned to play the balalaika. Unlike Scholl, Schmorell had never been enticed by National Socialism; he despised its strictly regimented lifestyle from the start. Although drafted into the *HJ*, he never showed up for meetings, and when he was called into the army, he refused to take the oath of loyalty to Hitler. When Schmorell was 25, he met Hans Scholl at the University of Munich, where they were both studying medicine. He introduced Scholl to Christoph Probst, a like-minded friend.

Christoph Probst's distaste for National Socialism grew from his belief in humanism, the same philosophy Hans Scholl's father espoused. Probst was very interested in the study of religion, and the brutal tactics of the Nazi government deeply disturbed him. Like Schmorell, he came from a diverse family—his stepmother was Jewish. Also like Schmorell, Probst was very artistic and loved literature and philosophy. He did not agree with the Nazi

idea that such pursuits made a person weak. “It’s a mistaken conclusion,” he once wrote, “that the intellectually developed person can take less because of his greater tenderness... [;] my viewpoint is that the intellectual can take more....” (Dumbach and Newborn 70). Probst never could have known that he would be forced to test his theory himself, as he awaited his execution. At the age of 23, he was the only core member of the White Rose to leave a spouse and children behind him.

The final founding member of the White Rose was Willi Graf. A devout Catholic and man of many interests, Graf enjoyed the arts, literature, and music. At no time did he accept Adolf Hitler or National Socialism. He completely cut ties with friends who joined the *HJ* and never associated with them again. While serving as an army medic in Russia, Graf developed a deeper disgust with the Nazis. The brutal way in which his fellow soldiers treated the Russians shocked him. Graf was 25 when he met Scholl, Schmorell, and Probst while studying medicine at the University of Munich. They soon realized Graf shared their beliefs and invited him to join their emerging resistance organization.

These founding members called their resistance organization the White Rose. Why the students chose the name is not clear. Some historians speculate that the image of a white rose was meant to symbolize purity, and others believe Hans Scholl chose the name after reading a book titled *The White Rose*, about a peasant uprising in Mexico (Hanser 183). Regardless of the symbolism behind their name, by the spring of 1942, their structure was in place

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and the group was ready to go to work (Dumbach and Newborn 56).

Among other goals, the White Rose sought to undermine the government’s presence at the University of Munich, where the Nazis were busily implementing their strategy to indoctrinate German youth. As early

as 1933, National Socialist watchdogs infiltrated the university; from that time, Nazi officials carefully scrutinized all lectures and changed course offerings to include classes like “Geography in the Service of the National Socialist State” (Dumbach and Newborn 83). Again, the students witnessed firsthand repression of freedom of expression, as their favorite and most outspoken professors vanished after delivering anti-Nazi lectures (Mayr 250). There was no room for individualism or free-thinking at the University of Munich. The student members of the White Rose felt stifled by this highly controlled environment and believed they were being cheated out of a real education. As they said themselves:

We grew up in a state in which all free expression of opinion is unscrupulously suppressed. The Hitler Youth, the SA, the SS have tried to drug us, to revolutionize

us, to regiment us in the most promising young years of our lives...our budding intellectual development is muffled in a fog of empty phrases. (qtd. in Scholl 91)

The White Rose knew the time had come to act, but how? Inge Scholl, a sister of Hans and author of a history of the White Rose, says the answer arrived in the Scholls' mailbox in the spring of 1942 (17). It was a printed sermon by Count von Galen, the Bishop of Munster, denouncing the Nazi practice of euthanasia. Hans Scholl read it through; the Bishop's words struck him: "We cannot take arms against the internal enemy who torments and conquers us. For us there is but one weapon: strong, tenacious, and firm steadfastness. Become strong! Remain unshaken!" (Scholl 18). While reading the Bishop's missive, Hans Scholl first thought of printing anti-Nazi leaflets. Inge Scholl watched as her brother perused the leaflet absent-mindedly. "Finally someone has the courage to speak..." she heard him say, "and all you need is a duplicating machine" (qtd. in Dumbach and Newborn 68).

The first leaflet of the White Rose appeared in June of 1942. Drafted by Hans Scholl, Schmorell, and Probst, the leaflet called for passive resistance against the Nazis. "Nothing is so unworthy of a civilized nation as allowing itself to be 'governed' without opposition by an irresponsible clique that has yielded to base instinct," the flyer read (Scholl 73). It went on to scold Germans for turning their backs on Hitler's crimes. "Do not forget," the White Rose warned, "that every people deserves the regime it is willing to endure" (Scholl 74). The students mailed copies of the leaflet to random addresses and some filtered down to the University of Munich. Sophie Scholl, Hans' sister and fellow student, found one lying under a desk (Dumbach and Newborn 59). She had long been opposed to National Socialism and was excited to think there were other students on campus that shared her views. She had no idea her brother or his good friends were involved.

Sophie soon joined the White Rose, like her brother, making a transformation from *BDM* leader to resistance fighter. Sophie, however, had begun to see through Nazi propaganda more quickly than her brother had. It all began when one of her good friends was denied membership in the *BDM* because she was Jewish. Scholl made no qualms about stating her opinions on the issue. She insisted that her friend, who had blond hair and blue eyes in contrast to her own darker features, was a more perfect Aryan than she was. Her final disillusionment came when *BDM* leaders forbade her to read the poetry of Heinrich Heine, another Jewish author whose works had been banned. "Whoever doesn't know Heine," Scholl had protested, "does not know German literature" (Dumbach and Newborn 34). Like her brother, Sophie Scholl had been strongly influenced by their father and believed deeply in his teachings of humanism and respect for all people.

Sophie Scholl learned of her brother's involvement in the White Rose by accident when she saw books and sources used in the leaflet in his apartment (Bartoletti 120). Scholl and his sister were very close, and out of fear for her safety he tried to persuade her to forget what she had seen. She refused. "By yourself," she told her brother, "you are powerless against them" (qtd. in Scholl 34). At the age of 21, Sophie Scholl became the youngest member of The White Rose.

Within the next month, the White Rose drafted three more leaflets, written in a similar vein as the first. The students distributed them by mail as before, but in a bold move, they also delivered suitcases full of them to neighboring towns (Koch 226). In the second leaflet, the White Rose urged the German people to take action against Hitler, no matter the consequences. "It is our task to find one another again," the second leaflet read, "to spread

information from person to person, to keep a steady purpose, and to allow ourselves no rest until the last man is persuaded of the urgent need of his struggle against this system". The leaflet continued, "After all, an end in terror is preferable to terror without end" (Scholl 77). This message was not dissimilar from the first leaflet, but the third contained an entirely new component: specific advice about what citizens could do to destabilize the Nazis. They suggested:

Sabotage in armament plants and war industries, sabotage at all gatherings...of the National Socialist Party...sabotage in all the areas of science...which further the continuation of the war...sabotage in all branches of the arts which have even the slightest dependence on National Socialism or render it service. Sabotage in all publications...that are in the pay of the "government" and that defend its ideology... (Scholl 83)

"Out of love for coming generations," the fourth leaflet pleaded, "we must make an example after the conclusion of the war, so that no one will ever again have the slightest urge to try a similar action." "We will not be silent," it concluded. We are your bad conscience. The White Rose will not leave you in peace!" (Scholl 87-88).

Despite this final warning, the White Rose was silent for a time. Hans Scholl, Schmorell, and Graf were all sent to the Russian front to serve as medics in the German army. The Russian winter did nothing to dampen their resolve; in fact, their experiences in Russia made them more determined than ever to carry on their struggle against the Nazis. The young men became captivated not only by the beautiful Russian countryside, but also by the Russians themselves and their way of life. Schmorell vowed never to remove the Russian mud from his boots (Hanser 200). Their experiences so moved them that they even attacked a group of German guards who were beating Russian prisoners (Dumbach and Newborn 110). That beating was the least of the horrors they witnessed in Russia; they also came face to face with the Holocaust. At a stop on the train ride back to Munich, the young men encountered a group of Jews being forced to work on the tracks. Hans Scholl saw a little girl, wearing the yellow Star of David, with "an expression of unspeakable sorrow" on her face (Scholl 39). He quickly gave her his rations and laid a fresh-picked daisy on top. He did not think she would accept it, but when he boarded the train and looked back, the girl was wearing the daisy in her hair.

When their term of service ended and the young men returned to Munich, they quickly formed plans to rejuvenate the White Rose. Hans Scholl and the other members were more serious than ever and became determined to expand their organization. They launched a massive fundraising campaign and traveled to the Stuttgart, Hamburg, Freiburg, and Berlin to generate support (Kater 132). They earned enough to buy a new duplicating machine and other materials such as ink, paper, and postage stamps (Hanser 210). The White Rose was back in business. Only this time, in hopes of making their leaflets even more effective, they sought outside help (Dumbach and Newborn 122).

Hans Scholl approached Dr. Kurt Huber for assistance. Huber was an outspoken and very anti-Nazi professor at the University of Munich. Though he was slightly disabled and stammered through his lectures, Huber was popular with the students—especially with the Scholls and their friends. Like the Scholls, he had no compunctions about reading books by Jewish authors and even recommended them in lectures. "Careful," he would add mockingly, "they're Jewish, you know. Don't get poisoned!" (qtd. in Hanser 168). Huber believed it was

his duty as an educator to protect German culture and integrity, both of which he felt were being destroyed by the Nazis. Despite an age gap of nearly a generation, Huber had come to admire the efforts of the White Rose and eventually collaborated in the composition of the fifth and sixth leaflets.

The fifth leaflet was much different from the first four. The language and style changed, reflecting the White Rose's desire to appeal to other resistance movements, and not only to students. As a result, it was shorter and less romantic, and in it the White Rose presented a specific plan for the future of Germany. "The Germany of the future must be a federal state," they argued. "Freedom of speech, freedom of religion, the protection of individual citizens from the arbitrary will of criminal regimes of violence—these will be the bases of New Europe" (Scholl 90). The leaflet pleaded, "Cast off the cloak of indifference you have wrapped around you... [;] in the aftermath a terrible but just judgment will be meted out to those who stayed in hiding, who were cowardly and hesitant" (Scholl 89-90). This time, however, the White Rose did not stop at words.

As soon as news reached the White Rose of the German defeat at Stalingrad, they felt the time was ripe for taking advantage of the low morale of Germany. Late one night, early in February of 1943, Hans Scholl, Schmorell, and Graf slipped out into the dark streets of Munich carrying paint and brushes (Gill 192). When dawn broke the next morning, disgusted Nazi officials woke to find "DOWN WITH HITLER!," "HITLER THE MASS MURDERER!," and "FREEDOM!" painted on the walls of various buildings all over the city (Hanser 237).

One of the buildings was the Nazi shrine of Feldherrnhalle, the revered site of Hitler's 1923 putsch (Dumbach and Newborn 140).

The White Rose also believed the loss at Stalingrad created an excellent opportunity for the distribution of a new leaflet—the sixth and final document of

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the White Rose. Dr. Huber composed this leaflet himself, and it was perhaps the strongest of them all. "The dead of Stalingrad implore us to take action," Dr. Huber urged, this time directly addressing German students (Scholl 93). "The name of Germany is dishonored for all time if German youth does not finally rise, take revenge, and atone, smash its tormentors... Students," he called, "the German people look to us" (Scholl 92). With only one modification by the students themselves, the leaflet was printed and prepared for distribution. Hans and Sophie Scholl decided to distribute copies by hand all across the University of Munich. They had taken such risks before and had little regard for the danger. This decision cost them their lives and the lives of their friends.

The school caretaker, Gestapo informant Jakob Schmied, saw the Scholls as they threw the leaflets down from the balcony in the university atrium (Gill 193). The Gestapo arrested the two Scholls on the spot and caught Probst the following day. The three were

soon put on trial for treason, with Roland Freisler, Hitler's hanging judge, presiding (Gill 194). It was no surprise to anyone present when Freisler sentenced the three students to death. The sentences were carried out only two hours later. Even with death so near, the students remained remarkably composed. "They bore themselves with marvelous bravery," one guard remembered. "The whole prison was impressed by them. That is why we risked bringing the three of them together once more—at the last moment before the execution... We wanted to let them have a cigarette together before the end..." (qtd. in Scholl 62). For a few brief moments, the trio stood in a hallway, quietly smoking their last cigarettes; then one by one, they were led to the guillotine.

However, the destruction of the White Rose did not end with the deaths of these three. Schmorell, Graf, and Dr. Huber were arrested and executed months later, on August 13, 1943 (Koch 227). Inge Scholl estimated that, when all was said and done, roughly eighty people were arrested for being affiliated with the White Rose (65). Included in this number were the families of the core members who were held for a time in "kinship custody" (Scholl 65). Sentences for the accused ranged from death, to imprisonment, to detention in concentration camps. The Nazis showed the accused no mercy. The White Rose and its affiliates were ruthlessly stamped out.

Why did the members of the White Rose receive such harsh punishment? Was their resistance that effective? Most historians argue that although they made a brave attempt, the White Rose failed to provoke much of a reaction. Walter Laqueur, author of *Young*

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Germany, writes, "Their anonymous outcry had the whole weight of the totalitarian state against it, with all its coercive and punitive machinery; theirs was a hopeless gesture, almost ridiculous but for its sincerity and bravery" (211). Author H.W. Koch agrees, saying that "their death was in vain: the hope

that it would cause repercussions throughout Germany proved futile" (227). Koch is right. Only three days after the execution of the Scholls and Probst, the Nazis held a rally at the University of Munich. "Hundreds of students cheered their approval," historian Susan Bartoletti writes. "They also gave custodian Jakob Schmied a standing ovation" (127).

The White Rose attempted to organize a widespread resistance movement, but their efforts were largely unsuccessful, primarily because the Nazis were so efficient at catching and arresting dissidents. Though some youth resistance groups managed to exist, like the Swing Youth, Laqueur argues that in such "cases resentment against...the state arose from causes of little significance—the dissolution of [youth groups], or some vexatious disciplinary measure" (211). In other words, such resistance was based on an adolescent desire to challenge authority, not on political or moral principles. Because the White Rose earnestly worked to destroy National Socialism, they remained isolated from such youth groups. Sophie Scholl hoped that what the White Rose did would "make waves," but the

waters remained remarkably calm after their executions (Scholl 279). There was no great swell of resistance after their deaths, only scattered graffiti on the walls of the University of Munich: “*Ihr Geist lebt Weiter*”—their spirit lives on! (Lewis 95).

However, perhaps the success of the White Rose should not be measured by their effectiveness in provoking active resistance alone. Author Michael Kater argues that even if their leaflets were ineffective and “characterized by a mixture of high idealism and crass naivete.... [T]he contents of these flyers and the consequences of their fearless distribution made these young Germans...into the few true heroes of the...resistance movement” (129-30). The mere existence of the White Rose lent it great importance. Authors Annette Dumbach and Jud Newborn argue, “If people like those who formed the White Rose can exist, maybe it means that this weary, corrupted, and extremely endangered species we belong to has the right to survive, and to keep on trying” (185). The fact that they stood alone lent even more nobility to their actions. No one expressed this idea better than the Scholls’ sister, Inge:

[The White Rose] stood up for a simple matter, an elementary principle: the right of the individual to choose his manner of life and to live in freedom... . Perhaps their greatness lies in the fact that they committed themselves for the sake of such a simple matter... . It is perhaps more difficult to stand up for a worthy cause when there is no general enthusiasm, no great idealistic upsurge, no high goal, no supporting organization, and thus no obligation; when, in short, one risks one's life on one's own and in lonely isolation. (14)

Whether or not the White Rose was an effective organization made little difference to Nazi officials. Again, the mere existence of the organization lent it importance—and in this case, a special menace. Robert Hanser expresses this idea well in his book *A Noble Treason*:

This was the first opposition to the rule of Adolf Hitler that had broken through to the light of day.... And it came from a source particularly galling to a movement that preened itself inordinately by winning over the youth of the nation. The universities were supposed to be hotbeds of National Socialist fervor; but here at the University of Munich...a fissure had opened.... Who knew but what the foundations were crumbling? (24)

This is exactly why the members of the White Rose were sentenced to die in so brutal a fashion; the White Rose and their leaflets jeopardized Nazi control over the minds of the youth of Germany. Hanser says it astonished Nazi officials that former members of the *HJ* and young people who had been “schooled, trained, and nurtured” by National Socialism could become its enemies (20). The White Rose exposed a fault in the Nazis' rigorous indoctrination program, a fault the Nazis were afraid would be widened by allowing groups like the White Rose to go unpunished. “We must put a stop to the idea that it is part of everybody's civil rights to say, write, publish, or paint whatever he pleases,” Hitler once said. “Everyone must know that if he raises his hand to strike at the State, then certain death will be his lot” (qtd. in Hanser 61). Hitler kept his vow, and five young people paid for it with the guillotine.

For the third and final time, the door at the end of the hallway opened and the guards led Hans Scholl into the courtyard and to the door of the unmarked building. Scholl paused before stepping inside. “*Es lebe die Freiheit*,” he shouted, his voice echoing around the courtyard—Long live freedom! (Hanser 284).

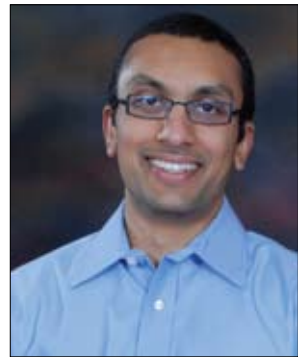
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Optimism of DNA Vaccines for HIV

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Abstract

In an effort to improve DNA vaccine immune potency, electroporation has emerged as a method of delivery of plasmids to target tissues. However, few studies have examined the use of this technology to deliver plasmid vaccines to the skin, particularly in large animal models. We have studied the effect of electroporation on DNA vaccine potency and plasmid delivery using skin as a target tissue. Initially, we delivered plasmid GFP through the intradermal/subcutaneous (ID) route in a pig model where we found that high plasmid concentrations resulted in improved gene expression. In a macaque model, we observed higher cellular and humoral responses to a DNA vaccine encoding HIV gag and env antigens and molecular adjuvant IL-12, with electroporation (ID+EP) compared to ID injection alone. ELISpot analysis demonstrated a TH1 mediated response with significantly higher levels of CD8 memory cells. These results serve to support the potential of ID+EP as an effective immunization approach in larger animal models.

Introduction

Currently, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO) have estimated that 33.2 million people are living with HIV.¹ The most staggering statistic is the rate of infection in impoverished areas of the world. Sub-Saharan Africa in particular has approximately 22.5 million people infected with HIV and 1.6 million of which are dying per year.¹ It is also key to mention the inverse correlation of available retroviral therapy and poverty, which greatly supports the general consensus that a safe, successful, and cost-effective vaccine is necessary to control the global HIV pandemic.²

The ideal solution of formulating an HIV vaccine has proved more difficult to create than originally thought. HIV has an inherent variability originating from an average of two errors made per replication cycle by reverse transcriptase, which lacks a proofreading mechanism. Coupled with the rapid replication rate, the virus quickly produces mutant strains capable of immune evasion and drug resistance.³⁻⁷

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Traditional methods of vaccine development

rely on production of potent antibody-induced protective immunity in response to live attenuated viruses or recombinant viral proteins. Though there are many problems that have arisen in application of these therapies to HIV, the most notable due to the previously stated mutation rate. The lack of fidelity in the genes that code for viral proteins is so great that neutralizing antibodies generated towards any one epitope may quickly be rendered useless.^{3,8} In some cases, the exposed, readily bound segments of HIV's envelope proteins (env) can mutate up to 35% of their amino acids without loss of function.⁸ The trademark mass-depletion of CD4+ T-cells and the ineffectiveness of inducible humoral immunity in HIV/AIDS patients has highlighted the role of CD8 T-cells in viral control.^{5,9} It has been long known that CD8+ activity is essential for control of viral loads.^{3-5,8-13} This phenomenon has been repeatedly seen by performing CD8 depletion studies, where soon after depletion there is significant viral rebound.^{3-5,8-13} Therefore, in addition to the many advantages over previously mentioned vaccination strategies the need of a customized immune response has made DNA vaccines (Figure 1) an attractive approach for immunization.

A popular method of gene delivery has been the use of viral or intracellular bacteria vectors. However, many people have pre-existing serology or develop neutralizing antibodies to these types of vectors, which is not an issue with plasmid DNA.⁸ Additionally, DNA-based vaccines are extremely stable, and are relatively easy to manufacture, store, and transport without a cold chain. With a majority of HIV/AIDS patients in underdeveloped areas such as sub-Saharan Africa, DNA vaccines hold many potential solutions to problems posed by viral vectors.^{8,11,12} However, a well-documented disadvantage to this attractive vaccine strategy is the lack of a potent immune response in large animal models.^{8,11,12,14}

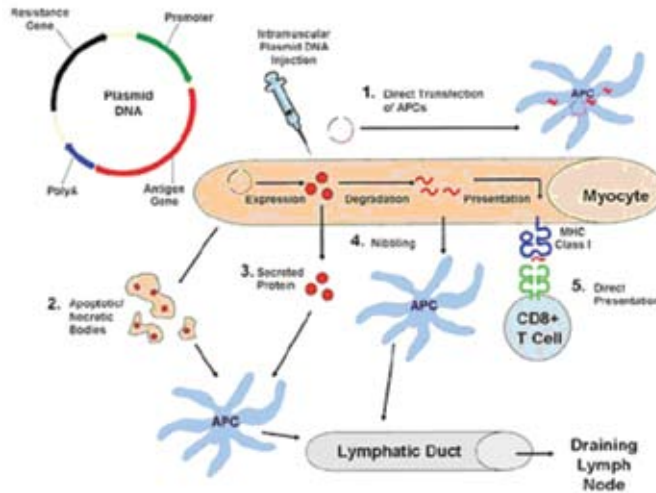


Figure 1. The plasmid is normally injected intramuscularly (IM) transfecting resident myocytes, using cellular processes to express the plasmid-encoded proteins.^{8,15} This mechanism strongly resembles an intracellular pathogenic infection and the cell and will proceed to present the foreign proteins from the plasmid onto the cell surface in a major histocompatibility complex 1 (MHC I) molecule for CD8 T-cell activation and Natural Killer (NK) cell recruitment.¹⁵ Additionally, the protein that the immunized cell is exporting into the media activates the MHCII pathway. Once exported, circulating DCs and macrophages will treat these proteins as foreign pathogens, internalizing them and activating CD4 helper T-cells.^{14,15} Figure taken from Hokey et al., 2006, with permission.⁸

As of September of 2006, the best naked DNA vaccines had a maximum gag-specific response secretion half that of adenoviral vectors measured by interferon- γ (IFN γ) ELISpot analysis.¹² To overcome the limited potency of DNA vaccines, researchers have tried a multitude of different approaches.

As shown in Figure 1 above, the majority of vaccinations are given IM, thereby transfecting myocytes. However, as we have seen before, traditional vaccination strategies do not elicit the potent immune response needed. This method largely induces cell-mediated immunity and minimal antibody production. A predominant theory for the low immunogenicity of IM injections is limitations of low transfection rates and the use of non-professional antigen presenting cells (APCs), in this case the myocytes, for immune activation. The lack of efficacy has led many to search for new delivery methods.

One such method uses a technique known as electroporation. Electroporation serves to apply a set electric current to the site of injection, enhancing transfection of DNA. The actual effect of electroporation on cells is not fully known. However, it is known that IM injection followed by electroporation will result in significant increases in plasmid delivery, which results in greater in vivo plasmid expression.^{8,12,16,17} These theories have been tested by injecting green fluorescence protein (GFP) encoded plasmids in pigs followed by

electroporation to assess plasmid expression.¹² In addition to increasing transfection rates, there is evidence that electroporation may induce a localized inflammatory response and therefore, a more potent immune response by trafficking immune cells to the point of injection.^{8,12} However, electroporation is not the only optimization method being examined. For example, intradermal/subcutaneous (ID) influenza immunizations have shown to produce significant increases in both arms of immune responses in comparison to IM.⁸ The increased immunological potency of this method is predominantly attributed to the large density of Langerhans Cells (LCs) and dermal DCs, which are professional APCs found in the dermal layer of the skin. Though this route of immunization is relatively painless, the ID space can limit the volume of DNA formulation administered.

To induce the desired Th1-polarized immune response many have shown the efficacy of molecular adjuvants.⁸ These molecular adjuvants serve as additional signaling molecules, such as those secreted by DCs during T-cell activation, that are able to select the appropriate immune response to the antigen.^{8,10-13} In particular, interleukin-12 (IL-12), a cytokine produced by APCs, has shown to preferentially activate the Th1 pathway and stimulate considerable increases in IFN γ secretion by T-cells, NK cells and APCs.¹³

Our goals for this experiment were twofold. We first assessed the ability of electroporation to enhance transfection and expression after ID+EP using a pig model with gene constructs expressing gfp. Secondly, we assessed the immunogenicity of optimized HIV plasmids expressing gag and env antigens and plasmid-encoded rhesus IL-12 when delivered by ID injection.

In this experiment we have used microelectrodes (μ EP) to prevent skin damage or discomfort during plasmid administration, with a good area of plasmid distribution, and stimulation of both humoral and cellular responses. Electroporation conditions from μ EP, as well as plasmid doses were assessed primarily using the pig studies. For the second aspect of our studies, rhesus macaques were immunized twice with a low dose of DNA (0.2mg/antigen) and then immunized three times with a high dose of DNA (1.0mg/antigen) by ID injection followed by electroporation.

Materials and Methods

Immunization protocol

In this study six Indian rhesus macaques (*Macaca mulatta*) were anesthetized and subsequently immunized into 2 ID injection sites with HIV DNA vaccines containing each of two HIV antigens (gag and env) and IL-12 expressing plasmid as an adjuvant. Immunization of three of these animals was followed by in vivo electroporation (ID+EP). The animals were immunized five times at weeks 0, 4, 8, 12, 16. Blood was collected every two weeks and ELISpot assays were performed two weeks after each immunization, while ELISA assays were performed four weeks after each immunization (Figure 3).¹²

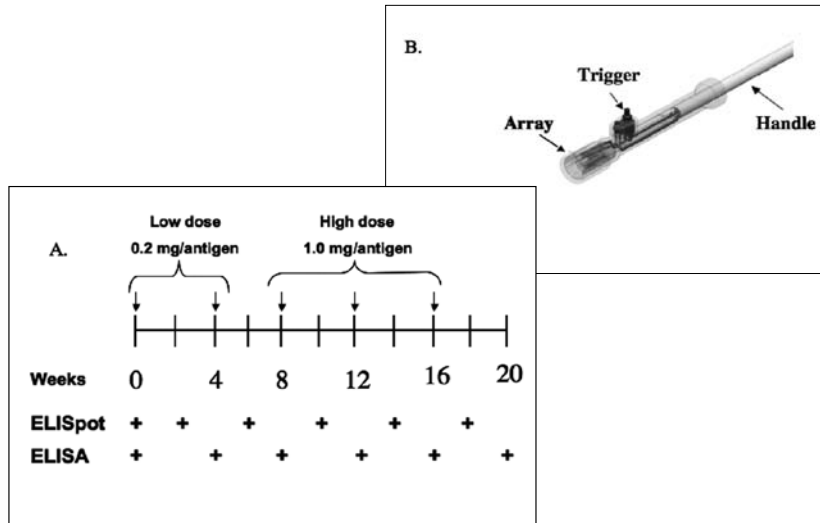


Figure 2. Non-human Primates Study Design and Electroporation (EP) Device. (a) Rhesus macaques were immunized twice with a low dose (0.2mg per antigen) of HIV-1 consensus immunogens and plasmid-encoded rhesus IL-12 at weeks 0 and 4. The animals were then immunized twice with a higher dose (1.0 mg per antigen) at weeks 8 and 12. Blood samples were collected approximately every two weeks for immune assays. ELISpots analysis was performed two weeks post-immunization and ELISAs performed at weeks 0, 4, 8, 12, 18. (b) Diagram of the ID microelectrode (μ EP) array and handle. Figure and caption taken from Hirao et al., 2007, with permission.¹²

Enzyme Linked Immunosorbant Assay (ELISA)

ELISAs were performed to determine circulating antibody titers. Isolated immune cells from blood samples were stimulated with 100ng/well of recombinant HIV-1 IIIIB p24 or gp120 (ImmunoDiagnostics, Woburn, MA) to determine HIV gag and env responses respectively. IgG end-point titers were defined as the reciprocal serum dilution that resulted in optical densities (OD) values that were greater than twice the average OD value of the blank BSA wells.¹²

Enzyme Linked Immunospot Assay (ELISpot)

ELISpot assays were performed as previously described, using IFN γ or IL-4 capture and detection antibodies (MabTech, Sweden). Antigen specific responses were determined by subtracting the number of spots in the negative control wells from the wells containing peptides. Results are shown as the mean value (spots/million splenocytes) obtained for triplicate wells.¹²

Results

In the study, we sought to optimize EP conditions for ID+EP immunization and to determine if similar increases in immunogenicity could be achieved with ID immunizations with EP in a non-human primate model. IFN γ ELISpot analysis showed that EP enhanced the induction of cellular immune responses by 33 percent and that this response was seen in the memory cell populations as there were twice as many IFN γ -producing cells in the ID/+EP group compared to the ID group (figures 4 and 5 respectively).¹²

Skin, as a target organ for plasmid injection and EP, has been used in only a small number of vaccination trials. In these experiments, we used micro-electrodes (μ EP) for delivery into the ID compartment and compared the resulting immune response to those achieved after IM+EP (Table 1).¹² We have shown that the use of μ EP resulted in excellent delivery, plasmid expression and induction of cellular and humoral responses in two large animal models, pig and non-human primates.

As with IM electroporation, ID+EP was able to induce high levels of antibody titers compared to needle injection (Table 1). Gag specific antibody titers were found to be 10-fold greater than the env (data not shown). The higher gag titers are consistent with previous IM+EP data from our lab. To further assess the induction of a Th2 mediated immune response, measured by IL-4 ELISpot (Figure 6). The lack of IL-4 responses suggests that HIV immunization with plasmid IL-12 by the ID route results in a Th1 mediated response.

When compared to previous data from our lab, as well as other IM+EP studies in non-human primates, ID+EP seems to induce similar levels of cellular immune responses through the first two immunizations at adapted plasmid doses. However, in this study we did not see further boosting in IFN γ -producing cells.¹²

We have attempted to modify the electrode configuration and pulse pattern for ID immunization. Though further optimization is necessary, our studies show that DNA delivery to the ID compartment could be useful for DNA vaccinations. In the future we hope to better characterize the immune responses induced by ID+EP vaccination and examine more in-depth aspects CD8 T-cell polyfunctionality using flow cytometry.

Table 1. Comparison of immune responses induced by electroporation with IM or ID. Figure and caption taken from Hirao et al., 2007, with permission.¹²

	IM	ID	IM+EP	ID+EP
IFNγ ELISpot				
Total gag and env responses (SFU/10 ⁶ PBMCs)				
Immunization 1	136 \pm 51	95 \pm 38	482 \pm 181	635 \pm 171
Immunization 2	223 \pm 76	376 \pm 210	1924 \pm 417	1466 \pm 762
Serum Antibody ELISA				
Gag Endpoint Titer				
Immunization 1	<50	<50	1500	2200
Immunization 2	<50	<50	4800	8800

IFN γ ELISpot and HIV gag ELISA results were taken after 3 doses at 1.0 mg/ antigen.

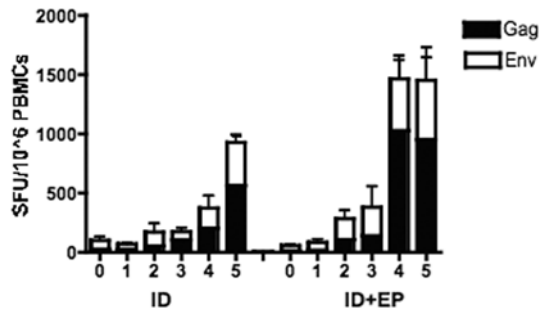


Figure 3. Enhanced cellular immune responses to HIV-1 consensus immunogens with ID co-injection of plasmid encoded IL-12 followed by EP. The IFN γ ELISpots were performed two weeks after each immunization. The data is shown as stacked group mean responses. Figure and caption taken from Hirao et al., 2007, with permission.¹²

CD8+ Memory

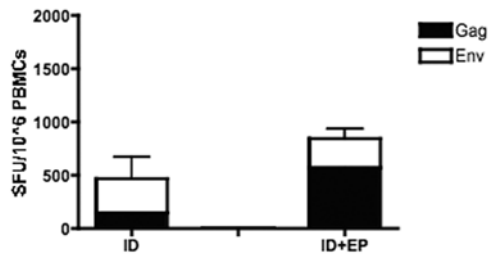


Figure 4. Enhanced memory responses to HIV-1 immunogens with ID+EP. Ten weeks after the last immunization, ELISpot assays were performed to determine antigen-specific memory responses to gag and env in the ID and ID+EP groups. The data are shown as group mean responses. Figure and caption taken from Hirao et al., 2007, with permission.¹²

IL-4

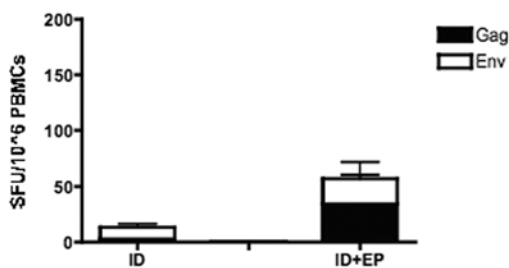


Figure 5. Induction of Th1 and not Th2 mediated cellular response following ID immunization of consensus HIV-1 gag, env and plasmid rhIL-12. An IL-4 ELISpot was performed at week 10 to assess the induction of a gag or env-specific Th2 response. Responses to env are depicted as white bars and gag are depicted as black bars with the data shown as stacked group mean responses. Figure and caption taken from Hirao et al., 2007, with permission.¹²

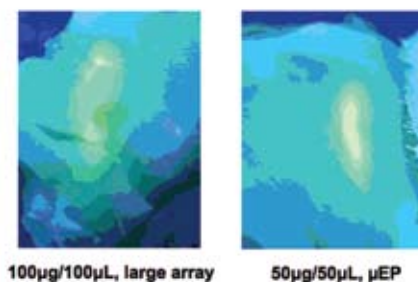


Figure 6. Green fluorescent protein expression after ID plasmid administration followed by electroporation (EP) in pig skin. Plasmids were delivered at different doses and volumes with either the larger EP array customary used for IM+EP (A), or the µEP (B). Figure and caption taken from Hirao et al., 2007, with permission.¹²

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