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# Examining the Associations of Parents' and Teenagers' Attitudes of Blood Donation and Intentions to Donate Blood

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# Examining the Associations of Parents' and Teenagers' Attitudes of Blood Donation and Intentions to Donate Blood

By

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Bachelor of Science
University of Missouri
2011

Thesis Committee Chair: Kimberly Jacob Arriola, PhD, MPH

An abstract of
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Abstract

Examining the Associations of Parents' and Teenagers' Attitudes of Blood Donation and Intentions to Donate Blood
By Meredith Johnson

**Background.** At present, approximately one-third of the U.S. population is eligible to donate blood. However, only a small fraction does donate blood. With a depleted blood donor pool, there is a foreseeable shortage in the blood supply. The inclusion of minors with parental consent is the most recent strategy to increase the blood donor pool. In order to increase the amount of young donors, a deeper understanding of the attitudes and intentions among parents and teenagers is essential. The present study seeks to examine relationships between parental and teenage attitudes and intentions to donate blood, and explore the importance of potential barriers to donating blood.

**Methods.** A cross-sectional survey was administered to parents and their dependent teenagers between 14 and 17 years of age. Survey items assessed one's attitudes and intentions to donate blood, and the degree of importance for potential barriers in the blood donation process. Correlational statistical analyses were performed to analyze potential associations.

**Results.** From the 29 paired surveys used for analysis, results of a Pearson correlation suggest that there is no statistically significant association between parental attitudes and intentions to donate blood, or teenage attitudes and intentions to donate blood. When controlling for demographic characteristics in a linear regression, there is no statistically significant association between attitudes and intentions to donate blood. Moderate agreement was observed between parental and teenage cognitive attitudes of blood donation ($\kappa = 0.60$, $p < 0.05$). Barriers related to fear were deemed low importance among parents and teenagers, while barriers related to the logistics of the blood donation process were deemed high importance.

**Discussion.** Among the participants in the study, parents and teenagers seem to have similar attitudes and intentions to blood donation. When targeting minors for blood donation, it is important to include parents in the interventions. The work from this study will be beneficial in informing future interventions to encourage blood donation.

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# I. Introduction

Blood transfusion is a common medical practice. Most individuals receive blood transfusions during short-term, life-threatening situations such as accidental and non-accidental trauma, severe blood loss during surgery, and reduced blood count following chemotherapy. Treatment includes whole blood or blood component replacement (Gustafson, 1999). Because whole blood and its components are not able to be synthesized at present, any blood used for medical transfusion purposes must be donated (Seifried et al., 2010).

The Department of Health and Human Services Advisory Committee on Blood Safety and Availability recommends a 5- to 7-day on-hand supply of blood as a desirable goal for the nation's blood centers. However, many centers are unable to adequately sustain a 3-day supply of blood, despite the ability to store human blood for a maximum of 42 days (Nouwairi, 2004; Popovsky, 2006). The maintenance of an adequate blood supply is important for medical care at the national and international level, otherwise a shortage of donated blood would critically hamper necessary blood transfusions for treatment, surgery performance, and emergency response (AABB & Westat, 2009).

In 2000, the California Medical Association had to postpone surgeries, and trauma care was at risk throughout California as a result of a blood shortage (Kolins &Herron, 2003). In 2001, another blood supply shortage was announced in San Diego and San Bernardino, California. The reports documented a blood supply of less than 12-hours for the city of San Diego, and O-type blood was completely depleted in San Bernardino (Kolins & Herron, 2003).

While the aforementioned incidences are concerns at the local level, there have been concenrs about the national blood supply. In 2002, the United States was faced with

a nationwide blood shortage resulting in the cancellation of several surgeries (Simon, 2003). Additionally, after the Hurricane Katrina natural disaster in 2005, the United States was faced with a deficit in the blood supply (Gajilan, 2007).

In an attempt to restore an adequate supply of blood, many interventions were implemented that targeted donor recruitment (Dariotis, MacPherson, & Bianco, 2001; Nightingale et al., 2003). Some interventions achieved success, while others failed. There has been a strong interest in determining why the blood shortage occurred and how to prevent future blood shortage. Some of the presumed reasons for the shortage were blood group incompatibility, seasonality, regional recruiting differences, events of post-HIV/AIDS era, increased restrictions for blood donors, and new testing for diseases (Simon, 2003). However, being able to address these concerns requires an understanding of the practices and beliefs of those individuals who are blood donors and are not blood donors.

Among the implemented interventions, the inclusion of 16-year-old blood donors is one strategy to increase the amount of sustained donations (Popovsky, 2006). At present, a total of 34 states in the United States allow 16-year-old individuals to become blood donors (Eder, 2012). Parental consent is required for a 16-year-old to donate blood in accordance with American Red Cross 'Eligibility Requirements' and state legislation. Individuals over 16 years are able to donate blood without parental consent. However, the lowest proportion of first-time donors is younger than 20 years of age, accounting for 24% of first time donors in 1991 (Schreiber et al., 2005). Inclusion of 16-year-olds was based on two underlying advantages of creating a donor pool comprised of potential repeat donors. First, these donors provide a relatively stable and comparatively safe

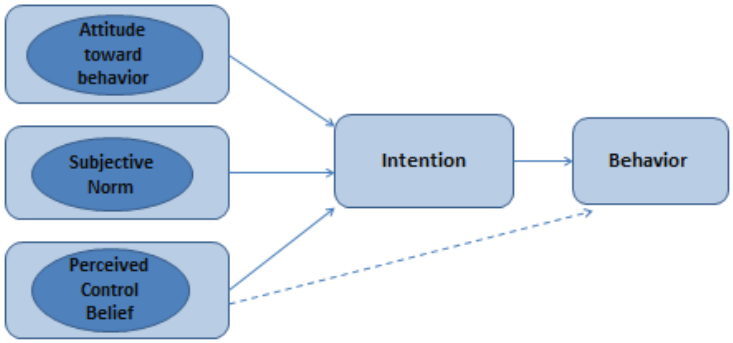
supply of blood. Second, they provide a long-term opportunity for blood collection agencies to save on costs associated with continual recruitment of new donors (Callero & Piliavan, 1983; Royse & Doochin, 1995). Any foreseeable shortages due to a shrinking donor pool can potentially be mitigated with the inclusion of minors.

Yet, such a strategy requires more understanding to ensure the willingness of minors to donate blood and of caregivers to provide parental consent. This project examines the barriers to minors donating blood.

## Theoretical Framework

This study is informed by Ajzen's Theory of Planned Behavior (TPB), utilizing individual intention as a primary motivational determinant of behavior (Godin & Kok, 1996). Because blood donation is a volitional behavior, some of the influences of choosing to perform blood donation is explained through TPB concepts. For volitional behaviors, these intentions are dictated by one's attitudes towards the behavior, subjective norm, and perceived behavioral control (Ajzen, 1991). As these motivational factors predict one's intentions, intentions ultimately predict the occurrence of the volitional behavior (Figure 1).

**Figure 1. Theory of Planned Behavior**



The constructs of TPB are theorized to influence an individual's intention to perform the behavior. An individual forms attitudes, or evaluations, that represent the feelings and beliefs towards the behavior (Veldhuzien, Ferguson, de Kort, Donders, & Atsma, 2011), including perception of how good or bad the consequences are likely to be (Ajzen, 1991). Subjective norms are also perceived by the individual. These norms correspond to the extent to which an individual perceives significant referents' approval or disapproval of the behavior. Social pressure to perform the behavior and one's motivation to comply with referents' beliefs comprise subjective norms (Veldhuzien et al., 2011). The ease or difficulty of performing the behavior is regarded as the perceived behavioral control (Veldhuzien et al., 2011). Theory of Planned Behavior predicts that a favorable attitude and subjective norm towards the behavior, in conjunction with a strong perceived behavior control will lead to a strong intention to perform the behavior (Veldhuzien et al, 2011).

The Theory of Planned Behavior has been applied to blood donation in previous studies (Armitage & Conner, 2001; Ferguson, 1996; Giles, McClenahan, Cairns, & Mallet, 2004). In previous research, the application of TPB to blood donation has demonstrated a strong association between the constructs of TPB and the behavior of blood donation. One's intention to perform a behavior is the strongest indicator of performance of the behavior (Ajzen, 1991). In 2004, Giles et al. performed a study examining intention to donate blood and blood donation behaviors among university students. The results elicited a strong correlation between intention to donate blood and an individuals' behavior of donating blood at the proceeding blood drive. With regards to repeat blood donations, a study performed in Australia found that intention was a strong

predictor for the repeat behavior (Masser, White, Hyde, Terry, & Robinson, 2009). Specifically, Masser et al. (2009) examined a sample of current donors to determine the strongest predictor of repeat blood donation. The results showed that intentions accounted for much of the variation.

Additionally, previous research on blood donation has shown a statistically significant correlation between attitudes and intention (Giles, McClenahan, Cairns, & Mallet, 2004; Godin et al., 2005; Lemmens et al., 2009). Giles et al. (2004) identified a strong correlation between attitudes and intentions to donate blood in a survey administered to university students prior to a blood drive. Among non-donor university students, Lemmens et al. (2009) found a strong correlation between affective attitude and intentions to donate blood. The study was repeated with a population not enrolled in school, but also non-donors, and the research team again found a strong correlation between affective attitude and intentions to donate blood. Godin et al. (2005) surveyed a random sample of adults, specifically measuring attitudes and intentions to donate blood. Attitudes were important for predicting one's intentions among individuals who were donors and non-donors. The TPB model has accounted for 60-70 percent of the variance in intentions to donate blood, with attitudes being one of the most important determinants (Lemmens et al., 2005). In a study examining non-donors among undergraduate students in the Netherlands, there was a statistically significant association between attitude and intentions to donate blood (Lemmens et al., 2005). A study focused on donor retention found attitudes to be a strong predictor of one's intentions to donate blood (Masser, White, Hyde, Terry, & Robinson, 2009).

The benefit of focusing on intentions of a behavior is that it can be a predictive measure to the behavior being performed at a future time period. In the case of blood donation, this is particularly important as not all individuals are current blood donors. Additionally, a parent's attitudes and teenager's attitudes directly impact one's willingness to donate blood. Thus, using TPB to gain a deeper understanding about one's intentions to donate blood based on attitudes can indicate a point of intervention to increase the blood donor pool.

**Research Aims**

The present study seeks to further the understanding of parent and teenager attitudes of blood donation. Additionally, the study seeks to gain more knowledge regarding potential barriers to blood donation and to a parent giving parental consent for the teenager to donate blood. Specifically, the research seeks to answer the following questions:

1. What is the association between attitudes of blood donation and intention to donate blood for parents and for teenagers?
2. What is the concordance of attitudes of blood donation between parents and teenagers?
3. What are potential barriers to blood donation among parents and teenagers, and providing parental consent?

The present research project is designed to gain knowledge regarding the attitudes and intentions of parents and their dependent minors with respect to blood donation. The results of the project will inform future interventions targeted towards these two groups of individuals.

# II. Literature Review

## Blood Donation Trends in the United States

The 2009 National Blood Collection and Utilization Survey Report documented a consistent increase in the rate of blood donation in the United States over the past decade (AABB & Westat, 2009). Approximately 43 blood donations per 1000 individuals constituted the median rate of donation, leading to a total of 17 million units of available blood (Mountford, Oliver, & Turner, 2010; Seifried et al., 2011). The available blood was used primarily for blood transfusions, which accounted for 15 million units (AABB & Westat, 2009).While these numbers are seemingly remarkable, the supply is not sustainable. Additionally, there is concern in regards to the demographics of the donor pool and stability of a donor pool to ensure a consistent adequate blood supply, both of which impact the achievement of an adequate blood supply.

Nearly half (48%) of all blood donors in the United States are over the age of 44 (World Health Organization, 2010). Based on the current trends, as the donor population increases in age, the donor base will inevitably shrink. Furthering the dilemma is the increase in demand for blood for the ageing population and performance of more complex surgeries (Carter, Wilson, Redpath, Hayes, & Mitchell, 2011; Seifried et al., 2011). Also important to note are the increased restrictions enacted to maintain a safe blood supply, which have limited the number of eligible donors. Riley, Schwei, and McCullough (2007) estimated only 38% (111 million) of the US population eligible to donate blood. Among those eligible, only 10% (10.8 million) are blood donors (AABB & Westat, 2009). Ensuring that sufficient numbers of donors are always willing and able to donate blood will avoid any future crises of a shortage in the supply. In doing so, the

barriers prohibiting and facilitators behooving an individual to donate blood must be considered in the design of any interventions targeted to mitigate the foreseeable blood supply shortage.

## Factors Influencing One's Decision to Donate Blood

### *Barriers*

Researchers have examined different populations to determine potential barriers and facilitators to blood donation practices. Individuals who have given blood or stopped are widely studied. Mathew et al. (2007) recruited and surveyed individuals who had given blood or stopped. They found that fear of needles, contracting a disease, and finding out about a disease were trending barriers. Societal barriers included media's negative publicity of wasting blood (Mathew et al., 2007) and an agency's reputation (Bendall & Bove, 2011). Inconvenience was also a barrier among this population (Mathew et al., 2007).

Donors and non-donors also serve as two populations for comparisons. McVittie, Harris, and Tiliopoulos (2006) surveyed individuals in the United Kingdom and found striking differences between donors and non-donors. Both groups, donors and non-donors, consider blood donation a helping behavior. However, non-donors stated anxiety, lack of relevant information, and inability to attend blood drivers as barriers, while donors did not mention these barriers. Bednall et al. (2011) obtained similar results among a variety of studies included in a meta-analysis of blood donation barriers.

### *Facilitators*

In addition to the several barriers to blood donation, research has examined facilitators of blood donation in differing populations. Among those who were donors

and non-donors, McVittie et al. (2006) concluded that there was a strong awareness of the blood supply issue and view of blood donation as a prosocial behavior, which facilitated individual's commitment to donate blood. Those who have never given blood or stopped giving blood rely on close locations, increased education and knowledge about blood donation processes and uses, retention of blood supply in one's community, and money as motivators to donate (Bednall et al., 2011; Mathew, et al., 2007). One's donor status did not negate a perceived need for donation and marketing communication strategies as strong facilitators to blood donation (Bednall et al., 2011). Influences of religion are a facilitator to blood donation (Gillum & Masters, 2010). However, the research of Gilum et al. (2010) showed evidence of a weak association for religion as a facilitator for women, but not men. For both groups, childhood religion was also a facilitator. Future interventions must consider the outlined barriers and facilitators to donate blood.

## Previously Implemented Interventions to Increase Blood Donation

To mitigate the potential for blood supply shortages, different strategies have been utilized. These strategies are related to designing prepared emergency responses, using alternatives to the current methods of providing blood in medical practice, creating appeals to the blood donation experience, and increasing the number of blood donors.

### *Prepared Emergency Responses*

Efforts have been made to prevent the shortage in times of disaster. A committee of the American Society of Blood and Marrow Transplant (ASBMT) created an emergency preparedness plan that calls upon members of different transfusion centers to be actively engaged in implementation procedures. In the event of a natural disaster, the actions of preparedness, response, and recovery will ensure that the blood supply is

unaffected (Wingard et al., 2006). Likewise, a working group at Mayo Clinic's Department of Laboratory Medicine and Pathology created a Mayo Emergency Incident Command System (MEICS) that works to ensure an effective plan in the event of catastrophic disasters (Bundy, Foss, & Stubbs, 2008). Mayo Emergency Incident Command System is organized similar to ASBMT's plan; a chain of command was created so all appropriate personnel are informed of the disaster. The creation of an organized flow of notifications allows for individuals to promptly respond to threats and preserve the supply of blood (Bundy, Foss, & Stubbs, 2008).

***Alternative Methods to Providing Blood***

Changes to the practice of medicine have also been considered to avoid blood supply shortages. A technique of bloodless medicine has had only minor effects on the blood supply dilemma. Specifically, bloodless medicine is a set of emerging clinical strategies for medical care without allogeneic transfusions. It is generally considered when patients object to transfusions for religious reasons, blood may be in short supply or not available, or when safe blood is unavailable (Goodnough, Shander, & Spence, 2003). Because it is not commonly accepted, the use of such a strategy has minimal impact on the blood shortage problem.

In a similar manner, different technologies have been considered to reduce the need for allogeneic transfusions. These technologies refer to the techniques and pharmaceuticals used including preoperative autologous donation, cell salvage, acute normovolemic hemodilution, and aprotinin, and other acid derivatives. Of these technologies, preoperative autologous donations and cell salvage are the most widely used technologies in hospitals (Hutchinson et al., 2001). For these technologies, blood is

collected from the patient prior to an operation and the blood and cells may be used after the procedures. This practice has become important for hospitals, but is deemed unsafe in disaster stricken areas (Hutchinson et al., 2001). As such, wide acceptance of these technologies is limited.

Researchers in the field of medical engineering have attempted to create a synthetic blood substitute to offset any shortages in the blood supply. It has been determined that an ideal substitute has the following properties: ability to be used as a safe alternative to blood; transports and readily releases oxygen; and can be used in emergency situations (Chang, 1999). A synthetic blood substitute would be used in emergency situations defined by an episode of hemorrhagic shock, severe anemia, or extreme normovolemic dilution (Nouwairi, 2004). Based on the criteria identified to sustain the essential biological processes of blood, a hemoglobin substitute has been created. The first generation of modified hemoglobin was based on molecular modification of hemoglobin either by chemical cross-linking or using recombinant-DNA technology. Due to the difficulties and imperfections of such a solution to the blood supply, this strategy is still in Phase 3 of clinical trials (Chang, 1999). Again, human blood donation has proven to be a sustainable technique, superior to the current state of modified hemoglobin (Nouwairi, 2004).

Autologous blood donations have also been a strategy implemented to offset blood supply shortages. Autologous blood donations entail an individual donating blood prior to any medical procedures that will be used if significant blood loss occurs and a blood transfusion is required (Chang, 1999). While this strategy seems plausible, it is more expensive than traditional whole blood donations because of scheduling and

managing, autologous donors tend to be older individuals, and ultimately require more counseling. The increased amount of waste is another factor raising costs (Chang, 1999). Patients who elect to perform an autologous blood donation are at a higher risk for chronic hemodilution (Brecher, 2001). Given these deficits to the reliance upon autologous blood donations to eliminate the blood supply shortage, this strategy has a decreased efficacy. It was most widely used and effective when the risk of a virus or illness from transfusion was evident (Brecher, 2001). Autologous blood donations can only partly prevent a blood supply crisis.

***Appeals to Donor Experience***

While donating blood, an individual may experience a vasovagal reaction, which is an anxiety response (Ditto, Wilkins, France, Lavoie, & Adler, 2003). Estimates made by Crocco and D'Elia (2007) suggest that less than 1% of blood donors experience a vasovagal reaction, and approximately 1% experience an adverse reaction to blood donation. An intervention was thus created to target individuals who experience vasovagal reactions, which entailed a 2-minute video explaining methods to reduce vasovagal reactions. Participants were instructed in Applied Muscle Tension exercises; instructions were to repeat a series of tension exercises of major muscle groups. In regards to intentions to donate blood, there was no statistically significant difference between those who were untreated inexperienced donors and treated inexperienced donors. In this study, inexperienced donors were those individuals who had given blood less than two previous times (Ditto, Wilkins, France, Lavoie, & Adler, 2003). Another study that employed an Applied Muscle Tension intervention to reduce vasovagal reactions found a decrease in the reactions during pre-donation (Holly, Balegh, & Ditto,

2011; Olatunji, 2012). Creating appeals to foreseeable anxiety has been an attempted intervention to increase the number of blood donors. However, the use of an Applied Muscle Tension intervention assumes that individuals have already made the decision to donate blood. The issue stems prior to this point.

The use of incentives to increase and sustain the donor pool has been a topic studied at international blood donation locations. Current blood donors in Italy were administered a questionnaire at the time of blood donation to assess the use of incentives to increase donations (Lacetera & Macis, 2010). Participants were asked, 'If you received 10 euros/ a voucher worth 10 euros you would donate…' Responses were 'more often than currently', 'same', 'less often', and 'would stop donating.' Approximately 95% of respondents reported similar donation behaviors if a voucher was given, and 85% reported a similar donation pattern if cash incentives were provided. Only 3% said they would increase donations if a voucher or cash incentive was provided (Lacetera & Macis, 2010). These results indicate that such an intervention would have minimal effects on increasing the donor pool. Rather, this intervention helps with the issue of increasing the number of returning donors, as individuals are rewarded for current behaviors and not encouraged to practice new behaviors.

***Increase Blood Donor Pool***

Because the donor pool is a factor in the blood supply shortage, methods to increase the number of donors have been created. In 2005, an intervention was implemented in Blood Centers of the Pacific in San Francisco, California with the aim of increasing the number of repeat donors. In this study, repeat donors are individuals who have successfully donated blood at least once and return for another donation (Reich et

al., 2006). For the intervention, three different recruitment strategies were implemented—an item incentive, appeals to empathy, and appeals to self-esteem. While the item incentive was ineffective, appeals to empathy was more effective. The results of this intervention indicate empathy as a potential point of intervention.

Interventions targeted to increase the number of individuals who decide to donate blood have been implemented. One such approach used in the Netherlands is to invite individuals to donate blood. Although by invitation only, the process for blood donation in the Netherlands is similar to the United States in that there is an annual deficit around peak times of the year, during the holiday season and early summer months. In both locations, a shortage in the blood supply is highly probable. Efforts to recruit more blood donors entailed a system of recruitment among social groups. Individuals who received a letter of invitation to donate blood were also provided with a pamphlet outlining different information segments targeted to '(1) increase donors' knowledge; (2) enhance donors' self-efficacy in relation to discussing blood donation and persuading others to donate; (3) generate positive atitutdes toward recruitment; (4) instill a sense of responsibility for recruitment of new donors; and (5) prompt motivated recruitment behaviors in the appropriate context' (Lemmens, Ruiter, Abraham, Veldhuizen, & Schaalma, 2010, p. 603). The results of the study indicate that those who were exposed to the intervention were more likely to participate in friend recruitment procedures, than those who were not provided with any promotional materials. Additionally, between 15 and 18% of those who were recruited by current donors subsequently donated blood (Lemmens, Ruiter, Abraham, Veldhuizen, & Schaalma, 2010). While this method effectively increased the donor pool, only small increases are predicted. Lemmens et al. (2010) estimated a 10%

increase in the donor pool with this intervention technique. Retention of donors was not evaluated in the study.

**Recent Strategy: Alterations to Eligibility Criterion**

Because of these repeated efforts aimed to increase and sustain the donor pool to no avail, the best strategy to maintain an adequate blood supply is to increase the number of eligible donors. This seemingly straightforward solution has been examined by the American Red Cross, a major collector for the blood supply. Limitations to the number of eligible blood donors exist because of health concerns for the donors and receivers— the blood supply must be adequate and safe. The list of eligibility criteria for blood donors established by the American Red Cross (Appendix A) is subject to revisions as more evidence from research is revealed and technology advances to provide and maintain a safe blood supply. For example, advocates are currently working to lift the ban against allowing men who have sex with men to be blood donors (Wainberg, Shuldiner, Dahl, Gilmore, 2010). A previously successful change was the lowering of the minimum age to donate blood, effectively increasing the blood supply (American National Red Cross, 2012).

***Inclusion of Minors***

The inclusion of 16-year-old blood donors was a strategy to increase the amount of sustained donations (Popovsky, 2006). After technologies were advanced to ensure minors were able to donate blood without adverse reactions, and the blood supply would remain void of contamination, select states opted to allow minors to donate blood.

According to American Red Cross 'Eligibility Requirements,' all individuals above the age of 16 are able to donate blood. However, any 16-year-old individual must

have parental consent. Each time an individual makes a donation, a parental consent form must be submitted (American National Red Cross, 2012).

Previous research concludes that younger donors are more likely to return to donate blood (Notari et al., 2009). These results of increased likelihood of repeat donations by younger individuals were mirrored from a prior 1993 study (James & Matthews, 1993). However, the lowest proportion of first-time donors are younger than 20 years of age— 24% of first time donors in 1991 (Schreiber et al., 2005). Another factor to consider is that these younger donors must have parental consent to take part in the donation process. Thus, it is important to know what potential barriers and facilitators exist for parents in giving consent to ensure younger donors' ability to aid in the maintenance of an adequate blood supply.

***Purpose of Parental Consent***

A proper informed consent process contains elements of disclosure, comprehension, voluntariness, and consent. These elements are addressed through explanations of '1) the reason for, the nature and purpose of, the risks and potential consequences of, the benefits from, and any feasible alternatives to the procedure; 2) the extent, limits, and mechanisms used to maintain confidentiality; 3) who to contact with questions; and 4) that participation is voluntary and discontinuation is possible at any time without penalty' (Shaz, Demmons, & Hillyer, 2009). Individuals who proceed through the consent process may not fully comprehend all of the associated risks with blood donation. This poses a problem as it is important for all blood donors to fully understand the procedures as it is considered a medical procedure with known risks of

harm. Additionally, blood donation does not generally have accepted direct and measurable benefits to the donor (Shaz, Demmons, & Hillyer, 2009).

In general, extensive research about the informed consent and assent procedures prior to blood donation has not been recorded. There exists a small amount of studies related to this topic, and more is warranted. For one study, researchers examined informed consent forms, parental consent forms, and general information forms from blood donation centers in 48 states. The forms were then scored based on the containment of the essential elements of an informed document. Scores were then converted into percentile levels. The majority of forms that were reviewed scored at the 40% level, falling considerably below level of 'acceptable' set at 90% level (Shaz, Demmons, & Hillyer, 2009). A failing consent procedure can influence an individual's willingness to participate in such procedures and allow a minor to participate as well.

***Parental Consent as Potential Impediment to Teenage Blood Donation***

Because parents are an integral part of an adolescent's life, the attitudes and intentions of a parent may influence decision making and behaviors. For example, in a study assessing sources of information for health-related topics, over 50% of the adolescent youth surveyed reported parents as a source of information (Ackard & Neumark-Sztainer, 2001). Specifically, 60% of males and 72% of females in grades 5$^{th}$ through 12$^{th}$ grade obtain health information from their parents.

Ackard and colleagues (2006) conducted another study that examined parent-child connectedness and different behavioral and emotional health outcomes. A total of 4,746 students were surveyed. Over 75% of males and females reported valuing their parents' opinions over friends' opinions when making serious decisions; nearly 50% of

males and females reported being able to talk to their mother “quite a bit” or “very much”; approximately 25% reported being able to talk to their father “quite a bit” or “very much”.

The results of these two studies indicate that many adolescent youth respect the decisions made by the parents. As such, parents who have unfavorable attitudes and intentions to blood donation may be a source of preventing their dependent teenager to give blood. The parent may be less inclined to provide parental consent for a health behavior to which they disagree.

**Aims of Current Study**

The acquisition of knowledge regarding blood donation to date has focused on select groups. Past research has solely examined donation trends and perceptions among minority or foreign-born groups (Murphy et al., 2009), differing age groups (Zou, Musavi, Notari, & Fang, 2008), gender differences (Crawford et al., 2008), and various regional locations (Crawford et al., 2008). Consequently, research has not examined attitudes of parents and teenagers, as it may influence a parent’s willingness to provide parental consent.

Thus, the present research project will examine parent-teenage dyads in regards to blood donation. This project will examine attitudes and intentions of parents and their dependent teenager. Based on previous research findings, we hypothesize the following results:

H1. A statistically significant correlation exists between attitudes of blood donation and intention for parents and for teenagers, such that as one’s attitudes are more favorable towards blood donation, so too are one’s intentions.

H2. A 60% agreement exists between attitudes of blood donation between parents and teenagers. Such an agreement corresponds to moderate agreement between the parents and teenagers (Viera & Garrett, 2005).

H3. An exploratory analysis will examine parental and teenage perceptions of potential barriers to blood donation. The relative importance of potential barriers dictated by the two groups will be examined.

The results of this research will provide information in the design and implementation of future blood donation interventions. Ultimately, the goal of the present study is to increase knowledge about parent and teenage opinions of blood donation. This information can help blood donation centers create interventions that will maintain an increased donor pool.

# III. Methods

In this cross-sectional study, each participant completed a 5-minute questionnaire. Formal informed consent and assent procedures were executed prior to completion of the survey. This study was approved by Emory University's Institutional Review Board.

## Participants

A target sample size of forty parent-teenager dyads (N=80), with all teenagers being 16 years of age, was desired. According to American Red Cross 'Eligibility Requirements,' all individuals above the age of 16 are able to donate blood. However, any 16-year-old individual must have parental consent (American National Red Cross, 2012). However, due to the online administration of the survey, the study sample included individuals who were between the ages of 14 and 17 years of age and a legal guardian.

Male and female legal guardians compromised the study sample. The legal guardians must have had the authority to give parental consent for blood donation. Participants were sampled from various locations around the United States including Kentucky and Florida, but primarily Columbia, Missouri. All of these states allow 16-year-old individuals to donate blood.

Exclusion was based on the criteria that each dependent must have a guardian available to complete the survey. Additionally, individuals were eligible to participate regardless of having donated blood previously or not.

## Measures

Items in the questionnaire assessed participant attitudes and intentions of blood donation. Additional items were included to measure potential barriers to blood donation

and to a guardian providing parental consent for a teenager to donate blood. Demographic characteristics and previous blood donation behaviors were also measured. The surveys administered to the adults and teenagers differed only in the demographic questions that were presented.

**Attitudes of blood donation.** The original 10-item attitude scale used by Lemmens et al. (2009) was adapted and included in the present research study. Only nine items were used to measure one's attitudes of blood donation. Five items on the scale measured one's cognitive attitude, while the other four items measured one's affective attitude. A statement was posed ("For me, giving blood would be..."), and participants were instructed to choose which word would best complete the sentence. For each item, a list of five words on a semantic differential was provided as potential responses. An example of a bipolar response assessing one's cognitive attitude is 'very bad (1) –very good (7)'. In contrast, an example of a bipolar response assessing one's affective attitude is 'very annoying (1) –very enjoyable (7)'. Four items were reverse recoded prior to score computations.

Overall attitude scores, as well as cognitive and affective scores, were calculated by summing the responses to each item in the scale. The lowest possible overall attitude score was 9, and the highest possible score was 45. However, in the present study, overall attitude scores for parents were between 12 and 36, and teenage scores were between 20 and 36. The possible range of scores for cognitive attitude scores is from 5 to 25. Among adults, cognitive attitude scores ranged from 8 to 20; among teenagers the scores ranged from 12 to 20. The lowest possible score for affective attitude is 4 to 20. Affective attitude scores fell between 4 and 17 for parents, and 8 and 17 for teenagers.

A test of reliability was performed on the attitude scale for parents and teenagers. A Cronbach alpha of 0.783 was generated for parents and a value of 0.684 for teenagers; however, with the removal of an item assessing the degree of self-importance and social-mindedness, the Cronbach alpha was 0.825 and 0.720 for parents and teenagers, respectively. This item was removed from analyses as we desired the highest test reliability. The Cronbach alpha for the parental cognitive attitude subscale was 0.825 and 0.657 for the teenage cognitive attitude scale. Cronbach alphas for the affective attitude scores were 0.709 and 0.656 for parents and teenagers, respectively. Based on the calculated values, the overall attitude scale and subscales each had acceptable reliability.

The mean overall attitude score among parents was 27.85 (SD = 5.27), while the mean overall attitude score among teenagers was 27.70 (SD = 3.46). Cognitive and affective attitude scores were also calculated for each parent and teenager. The mean cognitive attitude score among parent participants was 15.52 (SD = 3.32) and 15.96 (SD = 1.97) among teenage participants. The parents involved in the study had a mean affective attitude score of 12.33 (SD = 2.73), while the teenagers had a mean affective attitude score of 11.82 (SD = 2.19). For purposes of analyses, a higher score indicated a more favorable attitude toward blood donation.

**Intention to donate blood.** In 2004, Giles et al. published a study examining intention to donate blood and blood donation behaviors. This 3-item scale has been used in several blood donation studies and has demonstrated a strong correlation between intention and behavior, as dictated by TPB (Giles et al., 2004). As such, an adapted scale was included in the present study. The scale consisted of three items that targeted one's intentions to donate blood. Possible responses were on a 7-point Likert type scale;

however, each item has a different meaning. For example, participants were asked, 'I will try to give blood.' Possible responses for that item ranged from 'probable' (1) to 'improbable' (7).

The sum of the responses for each item yielded a total intention score. The minimum possible score is 3, while the maximum possible score is 21. In the present study, scores for parents and teenagers ranged from 3 to 21. The Cronbach alpha for this scale among parents is 0.935 and among teenagers is 0.855, indicating a high reliability.

Based on the three-item scale used to measure one's intentions to donate blood, the mean intention score for parents was 15.15 (SD = 6.77), while **t**he mean intention score for teenagers was 12.85 (SD = 6.01). A high total score indicates that an individual has a low intention to donate blood.

**Blood donation status.** Previous studies have examined groups based on participant's blood donation status (i.e. non-donors, first-time donor, repeat donor, lapsed donor; Lemmens et al., 2005; McVittie, Harris, Tiliopoulos, 2006; Schreiber et al., 2006). In the present study, participants were asked a single item, "Have you ever successfully donated blood?" Responses could be either 'yes' or 'no.' Based on these results, a participant was categorized as either a blood donor or non-donor.

The 14-item scale, borrowed from Ferguson and Chandler (2005), also was presented in the survey to assess blood donation status. Specifically, only 13 items from the original scale were included in the survey to stage one's blood donation status by Transtheoretical Model. Five items were designed to categorize participants into the stages of pre-contemplation, three items for contemplation-preparation, and five items measured action-maintenance. Example items from the scale are "I would routinely give

blood out of habit" and "Thinking about blood donation is a waste of time for me, it's not my problem". Participants were instructed to choose the response that best described their degree of agreement with the statements. Responses were on a Likert-type scale from 'strongly disagree' (1) to 'strongly agree' (5).

To calculate a participant's score, and subsequently categorize the stage of blood donation, each response was summed for the corresponding stage. These scores were based on the items used to create the subscales for pre-contemplation, contemplation-preparation, and action-maintenance. Clusters were then created based on the summated scores for each stage (Ferguson & Chandler, 2005). The lowest possible score for the pre-contemplation subscale is 5, while the highest possible score is 25. In the study, the score range among parents was 6 to 19, and teenager scores ranged from 4 to 12 for pre-contemplation. For the contemplation- preparation subscale, the lowest possible score is 3, while the highest possible score is 15. Parent scores ranged from 3 to 13; teenage scores ranged from 2 to 8. The lowest possible score for the action-maintenance subscale is 5, while the highest possible score is 25. Parental and teenage scores ranged from 4 to 20 for action-maintenance.

Prior to computing the summated scores for the stages of change related to blood donation, the reliability of the subscales was independently calculated for parents. Each subscale was found to have a good reliability based on Cronbach α values ($\alpha > 0.70$). The pre-contemplation subscale for parents had a Cronbach α of 0.701 when the item 'Anyone can talk about giving blood, I've actually done something about it' was removed. The preparation subscale had a Cronbach α of 0.820; no items were removed.

Lastly, a Cronbach α of 0.931 was observed for the action-maintenance subscale without the item 'I have been a blood donor for at least 18 months'.

Among parents who completed the stage of change scale, the average score for pre-contemplation was 10.67 (SD = 3.78), the average preparation score was 6.85 (SD = 3.02), and the average score for action-maintenance was 8.67 (SD = 4.44).

Reliability assessments were also performed for teenage stages of change subscales prior to score computations. For teenagers, the pre-contemplation subscale had a Cronbach α of 0.429 without the item 'I have done something about my decision to donate blood'. The Cronbach α for preparation was 0.705 without the item 'I think I might want to give blood', while the subscale measuring action-maintenance had a Cronbach α of 0.889 without the item 'Even though I don't always make it, at least I try to go and give blood'.

Among the teenagers in the study, the average pre-contemplation score was 8.21 (SD = 2.29), the average preparation score was 3.79 (SD = 1.72), and the average action-maintenance score was 8.31 (SD = 4.21). A higher score within each subscale indicates a higher degree of agreement with the beliefs of the stage categorization.

**Barriers to blood donation.** A recurring list of barriers to blood donation found in many studies was included in the survey (Gillespie & Hillyer, 2002; Schreiber et al., 2006). A total of 16 potential barriers were included to determine the degree to which the barriers influence an individual's decision to donate blood. The potential barriers included in the survey were negative motivators or process measures (Gillespie & Hillyer, 2002), with domains of convenience, staff factors, overall experience, lengthy process, relocation, physical factors, fear, and deferral reasons. Example items included

‘the skill of the staff’, ‘the amount of time it takes to donate’, and ‘I am not aware of the need for blood’. Responses were measured on a Likert-type scale from ‘not very important at all’ (1) to ‘very important’ (5). Each barrier was analyzed separately to garner a potential response to the final research aim (discussed below).

**Ineligibility factors.** The American Red Cross has identified a list of 31 characteristics that prohibit an individual from donating blood for 1-60 days, 60-365 days, or indefinitely (Riley, Schwei, & McCullough, 2007). Participants were first asked a closed-ended question, “Have you ever been told by a blood donation service that you may not donate blood?” Responses were either ‘yes’ or ‘no’. If a participant responded ‘yes’, then he/she was instructed to complete an open-ended question exploring why he/she was not allowed to donate blood.

**Demographics.** Age, gender, and race/ethnicity are common descriptors of blood donors. These items were included in the survey. An additional question assessing how often individuals discuss blood donation with their parent or teenager was included. Participants were asked, “Do you talk with your parent/teenager about blood donation?” Responses were often, sometimes, rarely, or never. Each participant was asked to provide his/her education level, while only the guardians were asked to provide his/her marital.

## Setting

The study procedures occurred in person or online. Surveys that were completed in person occurred in Columbia, Missouri and Florida. Online administration of the survey occurred primarily in Columbia, Missouri, but also in the state of Kentucky and other unspecified locations in the United States. Data collection lasted approximately two months, specifically starting November 22, 2012 and ending on January 31, 2013. For the

surveys that were administered in person, administration of the questionnaire took place at various privately-owned locations in Columbia, Missouri. All other surveys were completed online.

**Recruitment**

The present study utilized snowball sampling for the recruitment procedures. For recruitment of participants for face-to-face administration of the survey, an initial recruitment of one lead parent-teenager dyads was done via telephone. The dyad was given a brief overview of the purpose of the study and how participation impacts future work in blood donation practices (Appendix B). As the parent-teenager dyad was recruited and completed proper informed consent procedures, the participants were asked to notify any peers who fit the inclusion criteria and were interested in participating. This initial lead was also given copies of the survey to be completed by peers, and then returned via United States Postal Service.

Another strategy used for face-to-face administration of the survey was performed by asking individuals if they knew any 16-year-olds and were willing to provide the contact information of the individuals. Potential participants were then personally contacted to present information regarding the project, gain interest, and, if desired, schedule a time to meet about study. Once a teenager-parent dyad was met in-person, the pair was given an informative flyer (Appendix C) to share with other individuals.

For online recruitment of the survey, individuals were asked if they knew individuals between the ages of 15 and 17 years of age. Those who did were then asked if the 15 to 17-year-old had acquaintances who were 16-years-old. A survey link was provided and individuals were asked to send the link to the 16-year-olds they knew.

Within three days, the initial individual was asked to send a reminder message to the contact about completion of the survey.

Some 16-year-olds were also contacted directly to complete the survey online. If an individual was given the survey link, whether they had contacts or completed the survey, he/she was then then asked to share the link with other individuals who fit the eligibility criteria.

**Procedures**

The present research project utilized a separate survey for parents (Appendix D) and teenagers (Appendix E).

First, eligibility of potential participants was determined. If a teenager was the age of 16, the individual's willingness to participate in the study was assessed. Interested individuals then completed the informed consent procedures. Participants were given the opportunity to ask questions regarding the study for further clarification. Immediately afterwards, participants were instructed to complete the self-reported survey online or via written survey. The responses from each dyad were filed together for analyses. Each teenager who was approached about the study was able to enroll in a drawing for a free Apple iPod. Additionally, participants were instructed to share the online survey link with other individuals who fit the eligibility criteria of 16 years of age. Individuals who completed the survey face-to-face were given the study personnel's contact information and a flyer to inform others about the research study. Individuals were given the opportunity to withdraw from the study at any time.

**Analysis**

Statistical analyses were performed using IBM SPSS Statistics Version 20. Completed questionnaires were placed into two different groups for analysis: parents and teenagers. Statistical analyses examined the differences between the responses for these two groups.

Initially, descriptive statistics were performed on the results from the parent surveys and teenager surveys. Frequencies and means of the demographic information were calculated. Once each participant's summated score from the attitude and intentions of blood donation scales was determined, the mean and range of the scores for the parents and teenagers were identified. A Two-Step cluster analysis was performed to categorize individuals into specific stages according to the Transtheoretical Model. The mean value for the importance of barriers to blood donation were determined for parents and teenagers.

The main predictor variable for the present study was one's attitudes of blood donation, while the outcome of interest for the study was intention to donate blood. The assumptions of normality and linearity were assessed and confirmed for parent and teenage attitudes and intentions prior to computation, as well as for the scores of the stages of change subscales. Based on previous literature, the variables of gender, age, race, and education level were used as potential confounders in analyses (Gillespie & Hillyer, 2002; Lemmens et al., 2009; Reid & Wood, 2008). To address the aforementioned research questions, correlations, linear regressions, *kappa* statistic, and multivariate logistic regression were performed. For all tests, an alpha value of 0.05 was used to determine statistical significance.

The first hypothesis predicts a statistically significant correlation between attitudes of blood donation and intention for parents and for teenagers. As such, a bivariate correlation analysis was used. Two separate correlation analyses were performed— a correlation among attitudes and intentions of parents and a correlation among attitudes and intentions of teenagers. Two separate linear regressions were subsequently performed as a means of predicting the intention of parents and teenagers based on attitudes of blood donation while controlling for gender, age, race, and education level.

In the research study, the second hypothesis predicts a 60% agreement exists between attitudes of blood donation between parents and teenagers. This concordance was measured with *kappa* statistics to determine the association of attitudes.

The final research aim of the study related to the examination of potential barriers to donating blood among parents and teenagers, and potential barriers to giving parental consent. For each potential barrier, the frequency of responses and the average rating of importance among parents and teenagers were determined. Each barrier was then classified as having ‘Low’, ‘Medium’, and ‘High’ importance based on the calculated averages. To determine the influence that a potential barrier has on the odds of providing parental consent for a minor to donate blood, a logistic regression was to be run.

# IV. Results

Nine parent-teenager dyads completed the survey in person. A total of 39 dyads accessed the online survey, to which 21 were completed and the rest were deemed incomplete. Use of the online survey yielded a 54% response rate. A total of 29 paired surveys were used for the analysis of this project— one was removed due to teenager's age above 17 years.

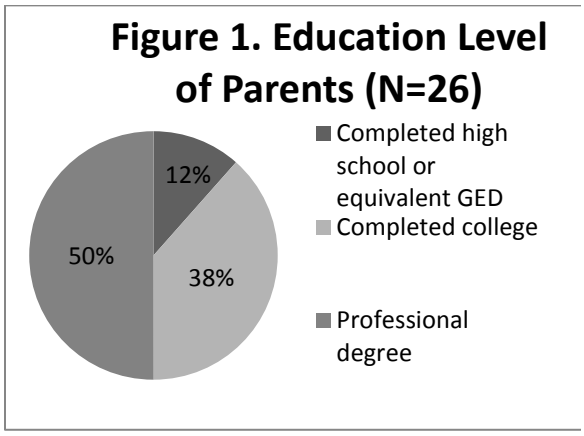
## Demographic and Behavioral Characteristics

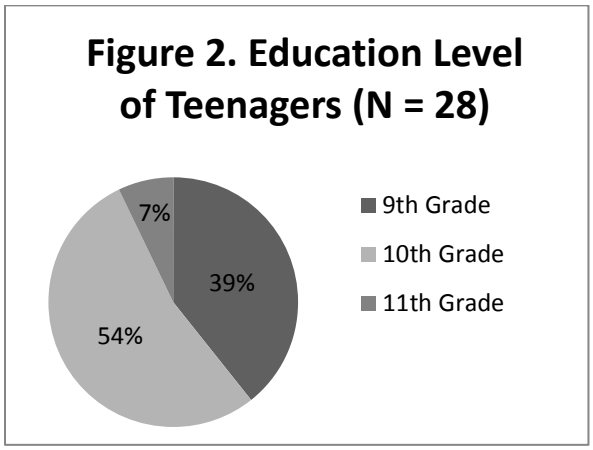
A demographic summary of the study sample is provided in Table 1. Parent participants tended to be female, Caucasian, and married. The majority of teenage participants were also female and Caucasian. The average age of parents was 49 years (SD = 7.55). The average age of teens was 16 years (SD = 0.63).

**Table 1.** Study Sample Demographics (N=58)

| | **Parents** n (%) | **Teenagers** n (%) |
|---|---|---|
| **Total** | 29 | 29 |
| **Age** (SD) | 49.25 (7.6) | 16.48 (0.6) |
| Min, Max | 34.6, 65.8 | 14.3, 17.6 |
| **Sex** | | |
| Male | 9 (34.6) | 11 (37.9) |
| Female | 17 (65.4) | 18 (62.1) |
| **Race** | | |
| Asian | 1 (4.0) | 2 (6.9) |
| Black/Non-Hispanic | 2 (8.0) | 2 (6.9) |
| Hispanic | 2 (8.0) | 1 (3.4) |
| White | 20 (80.0) | 22 (75.9) |
| Other | 0 (0) | 2 (6.9) |
| **Marital Status** | | |
| Married | 24 (92.3) | -- |
| Divorced/Separated | 2 (7.7) | -- |

The education level of parents (Figure 1) and teenagers (Figure 2) was also assessed in the survey. All of the parents in the study had at least a high school degree. The lowest grade completed for teenagers was 9th grade, with the majority having completed 10th grade.




Only seven parents (28.0%) had never successfully donated blood before, compared to 18 parents (72.0%) who had previously donated blood. When asked if an individual had previously donated blood, twenty-six (96.3%) of the teenagers said 'no'. Only one teenager (3.7%) had successfully donated blood.

Variation in the amount of discussion about blood donation between parents and teenagers was observed. Most parents and teenagers reported having very infrequent discussions about blood donation. The agreement between the responses provided by teenagers and parents is provided in Table 2.

**Table 2.** Reported Frequency of Parent-Teenager Blood Donation Discussions

| | | Parent Responses n (%) | | | |
|---|---|---|---|---|---|
| | | **Sometimes** | **Rarely** | **Never** | **Total** |
| **Teenage Responses n (%)** | **Sometimes** | 1 (25.0) | 1 (25.0) | 2 (50.0) | 4 |
| | **Rarely** | 3 (30.0) | 7 (70.0) | 0 (0.0) | 11 |
| | **Never** | 1 (7.7) | 4 (30.8) | 8 (61.5) | 13 |
| | **Total** | 5 (18.5) | 12 (44.4) | 10 (37.0) | 27 |

Over 90% of the parents in the study sample (n = 26, 96.3%) would allow their teenager to donate blood.

**Attitudes of Blood Donation.** Each participant was categorized as having 'High' or 'Low' attitude based on a performed median split of the range of total scores for overall attitude, cognitive attitude, and affective attitude. For teenagers and parents, a cumulative overall attitude score above 27 corresponded to 'High Attitude'; a cumulative cognitive attitude score above 15 corresponded to 'High Cognitive Attitude'; and a cumulative affective attitude score greater than 12 corresponded to 'High Affective Attitude'. Among parents, 13 (48.1%) had low overall attitude scores, 14 (51.9%) had low cognitive attitude scores, and 17 (63.0%) had low affective attitude scores. Among teenagers, 13 (48.1%) had low overall attitude scores, 11 (40.7%) had low cognitive attitude scores, and 15 (53.6%) had low affective attitude scores.

A Two-step cluster analysis was performed for teenagers and parents based on the mean scores for the three stages of change sub-scales. Results of the analysis generated one cluster for teenagers and one cluster for parents.

**Hypothesis 1**

A Pearson correlation test was performed to examine the association between parental attitudes towards blood donation behaviors and intentions to donate blood.

Results suggest that there is not a statistically significant association ($r = -0.03$, $p > 0.05$). An additional Pearson correlation test was performed to examine the association between teenage attitudes towards blood donation behaviors and intentions to donate blood. Results suggest that there is not a statistically significant association ($r = 0.02$, $p > 0.05$).

To determine the existence of an association between overall attitudes and intentions to donate blood for parents and teenagers, two separate linear regression analyses were performed (Table 3). Age, race, sex, and education level were used as potential confounders in the regression. The results of the linear regressions suggest that there is no statistically significant association between overall attitudes and intentions to donate blood among parents (B= -0.472; 95%CI: -1.157, 0.214; $p > 0.05$) or teenagers (B= 0.075; 95% CI: -0.771, 0.922; $p > 0.05$).

**Table 3.** Results of Intentions Regressed with Attitudes

| | **B** | **95% C.I.** | **p-value** |
|---|---|---|---|
| **Parents** | -0.472 | -1.157, 0.214 | 0.166 |
| **Teenagers** | 0.075 | -0.771, 0.922 | 0.853 |

Results of a Pearson correlation indicate that there is no statistically significant association between a parent's stage of change score and attitudes toward blood donation behaviors was observed (pre-contemplation: $r = -0.23$, $p > 0.05$; preparation: $r = 0.09$, $p > 0.05$; action-maintenance: $r = 0.17$, $p > 0.05$). Similarly, there is no statistically significant association between a teenager's subscale score and attitudes towards blood donation (pre-contemplation: $r = -0.35$, $p > 0.05$; preparation: $r = -0.05$, $p > 0.05$; action-maintenance: $r = -0.14$, $p > 0.05$).

**Hypothesis 2**

A *kappa*-statistic was performed to measure the concordance between teenage and parental attitudes of blood donation. The level of agreement was based on the 'High' and 'Low' designations of teenage and parental cumulative attitude scores.

Results of the kappa-statistic (Table 4) suggest that a moderate agreement among cognitive attitude categorization exists between teenagers and parents ($\kappa = 0.60$, $p < 0.01$). The measured concordance between overall attitude ($\kappa = 0.21$, $p > 0.05$) and affective attitude ($\kappa = -0.10$, $p > 0.05$) were not statistically significant. Thus, the hypothesis was partially supported.

**Table 4.** Results of Kappa Statistic for Attitudes Among Parents and Teenagers

| | K | p-value |
|---|---|---|
| **Overall Attitude** | 0.209 | 0.271 |
| **Cognitive Attitude** | 0.598 | 0.003* |
| **Affective Attitude** | -0.096 | 0.619 |

*Results are statistically significant

**Hypothesis 3**

Some barriers were considered very important by the majority of the parents and teenagers, while some were considered not very important at all by the majority as shown in Appendix F. Specifically, parents reported that the skill of the staff was very important in making a decision to donate blood (n = 17, 65.4%). Likewise, the majority of teenagers believed that the skill of the staff was very important in deciding to donate blood or not (n = 16, 55.2%). Additionally, the majority of parents reported the way the staff treats them as being important (n = 13, 52.0%).

In contrast, barriers related to travel were viewed as not very important at all for the majority of parents. A similar trend was also observed for teenagers. The majority of

parents (n = 12, 52.2%) and teenagers (n = 15, 55.6%) also cited fear of being deferred as a barrier that is not very important at all in making the decision to donate blood.

An average rating of each potential barrier to blood donation was calculated. The barriers were then categorized as being of 'Low' ($\bar{x}$ = 1.0-2.59), 'Medium' ($\bar{x}$ = 2.6-3.49), or 'High' ($\bar{x}$ = 3.5-5.0) importance to parents and teenagers are diagrammed in Table 5.

**Table 5a**. Parental Perceptions of Relative Importance of Potential Barriers

| **High** $\bar{x}$ = 3.5-5.0 | **Medium** $\bar{x}$ = 2.6-3.49 | **Low** $\bar{x}$ = 1.0-2.59 |
|---|---|---|
| • The convenience of the place for me to donate<br>• The skill of the staff<br>• The way the staff treats me<br>• If I had a previously bad experience<br>• The amount of time it takes to donate<br>• Finding a nearby donation center<br>• How hard it is to find my veins | • I fear I may feel sick during or after donation | • I am afraid of needles or dislike the sight of blood<br>• I am afraid it hurts<br>• I cannot donate due to medical reasons<br>• I cannot donate because of travel to other foreign countries<br>• I learned that I cannot donate because of travel to the UK or Europe<br>• I am afraid I will be deferred<br>• I am not aware of the need for blood<br>• I am never asked to give blood |

**Table 5b.** Teenage Perceptions of Relative Importance of Potential Barriers

| **High** $\bar{x}$ = 3.5-5.0 | **Medium** $\bar{x}$ = 2.6-3.49 | **Low** $\bar{x}$ = 1.0-2.59 |
|---|---|---|
| • The convenience of the place for me to donate<br>• The skill of the staff<br>• The way the staff treats me<br>• If I had a previously bad experience<br>• Finding a nearby donation center.<br>• How hard it is to find my veins | • The amount of time it takes to donate<br>• I fear I may feel sick during or after donation<br>• I am never asked to give blood | • I am afraid of needles or dislike the sight of blood<br>• I am afraid it hurts<br>• I cannot donate due to medical reasons<br>• I cannot donate because of travel to other foreign countries<br>• I learned that I cannot donate because of travel to the UK or Europe<br>• I am afraid I will be deferred<br>• I am not aware of the need for blood |

A logistic regression was to be performed to determine the influence selected barriers have on a parent's intention to provide consent for his/her teenager to donate blood. The results of such a regression would produce an odds ratio, indicating the degree to which a barrier increases the probably of one providing consent. However, no statistically significant result of a Chi-square test could be obtained from a bivariate analysis between parental consent and the potential barriers, thus inhibiting the ability to perform the regression.

A Chi-square test was to be used to determine the statistical significance of potential barriers to parental consent for inclusion in a logistic regression. The data must be such that an expected frequency of at least five is achieved. Given that the distribution of individuals who would not provide parental consent for a teenager to donate blood (n = 1; 3.4%) is below the minimum value of five, such an analysis was unable to be performed. As such, the present study is unable to properly predict the likelihood of providing parental consent in relation to potential barriers.

# V. Discussion

## Conclusions

**Hypothesis 1.** Our study did not identify a statistically significant correlation between attitudes towards blood donation behaviors and intentions of blood donation among parents. Likewise, there was no significant correlation between attitudes towards blood donation behaviors and intentions of blood donation among teenagers. We also found no statistically significant correlation between attitudes toward blood donation and the stages of change score in the Transtheoretical Model related to blood donation among parents or teenagers. One's favorable attitude did not associate with more or less willingness to donate blood. Our results differed from previous literature which articulated attitudes being correlated with one's intentions, and by extension, the observed behavior (Giles, McClenahan, Cairns, & Mallet, 2004; Godin et al., 2005; Lemmens et al., 2009). Giles et al. (2004) included 100 college students for analysis, while Godin et al. (2005) included 1000 individuals and Lemmens et al. (2009) included 246 individuals. These differences in a larger sample size could account for the observed differences between our study and those studies.

The measures incorporated in the survey may have also impacted the inability to observe a statistically significant association between attitudes and intentions of blood donation. We measured intentions to donate blood for an age range that included individuals eligible and not eligible to donate blood. These scores may not be entirely accurate, as the actual scores do not reflect the ability to act upon such intentions. Additionally, knowledge of blood donation was not assessed in the survey. One's knowledge of the blood donation process and need for donated blood may impact one's attitudes, and consequently, one's intentions to donate blood. Because we did not assess

knowledge, we are unable to examine this variable as a potential confounder or mediator in the association between attitudes and intentions.

**Hypothesis 2.** Interestingly, the results of the *kappa* statistic indicated that the degree of agreement between cognitive attitudes of parents and teenagers was moderate and statistically significant. Overall attitude and affective attitude scores showed no statistically significant concordance.

These data indicated that as parents have more favorable attitudes towards blood donation, the dependent teenagers also will have favorable attitudes to donating blood. Likewise, as parents have less favorable attitudes of blood donations, the teenager's attitudes follow in the same manner. However, with a closer examination, it appears that parents and teenagers have similar thoughts, beliefs, and ideas regarding blood donation, and differ in emotional attitudes of blood donation.

A few explanations may be used to address the reasons for the found results. Because of the manner in which the survey was administered, such that parents and teenagers must be present together for completion, the participants of the study may have a close relationship. Within this close relationship, information is shared, but blood donation may not be shared as more often as indicated by the frequency of conversations related to blood donation. The teenagers in the study may also be more apt to model parental behaviors. Lastly, sharing cognitive attitudes of blood donation may occur more readily than affective attitudes, one's emotions. An examination of the type of relationship, whether authoritative or authoritarian, between parents and teenagers may give further indication to the concordance between attitudes among parents and teenagers.

**Hypothesis 3.** Our third research aim explored the relative importance of potential barriers to blood donation and providing parental consent. Among parents and teenagers, there were similarities in the barriers rated most important. Both parents and teenagers identified the interactions and finesse of the personnel at the blood drive as important factors to choosing to donate blood. However, parents viewed the time commitment to blood donation as an important barrier, while teenagers identified it as being only of moderate importance. In contrast, teenagers believed that never being asked to donate blood is a barrier of moderate importance, while parents believed it to be low importance. Both parents and teenagers identified the fear of needles, pain, and deferral as being of low importance for undertaking blood donation. The findings in our study were similar to those of Scheiber et al. (2006) and Gillespie and Hillyer (2002), both of which found convenience to be an important barrier to blood donation. However, our study differed from Schreiber et al. (2006) who noted fear of pain as high importance among first-time donors. Likewise, Gillespie and Hillyer (2002) found fear of needles and pain to be an important negative factor to blood donation among non-donors. We did not focus on an individual's blood donation status and legal ability to donate blood as did Gillespie and Hillyer (2002), and this methodology could account for the observed differences.

**Strengths and Limitations**

The present study is unique in that it was the first of its kind, to our knowledge, examining parental and teenage attitudes and intentions together. Previous studies have examined the two groups separately, but not as a dyad. As such, this pilot study can serve

as a springboard for much larger studies of parental and teenage attitudes and intentions of blood donation.

Our study was not without limitations particularly with respect to the generalizability of the findings. We had a small sample size of 29 dyads, and our sample had an overrepresentation of parents having college degrees. Additionally, in order to increase our sample size, we expanded the age of inclusion to individuals between 14 and 17 years of age, and the attitudes and intentions could possibly differ between ages 16 years and someone being younger or older. Because 16-year-olds are required to have parental consent and are the youngest eligible age of blood donation, those under 16 are hard to measure on an intention scale to donate blood (Popovsky, 2006). Conversely, those above the age of 16 years do not require parental consent, and this could influence the attitudes for teenagers older than 16 years. Another limitation was the elimination of an item in the stages of change scale prior to execution of the survey. Removal of the item prior to execution may have altered the validity of the adapted scale. Lastly, the data collected had a restricted range for response of parents' willingness to provide parental consent for a minor to donate blood. This hindered the ability to perform additional statistical analyses examining the effects of potential barriers on providing consent.

**Recommendations and Implications**

To expand upon the current project, additional research studies should be performed. More work is needed to understand the difference and lack of statistically significant correlation between attitude and intention scores among participants of the present study, as predicted by the Theory of Planned Behavior. Additionally, future studies should seek to explore parental and teenage attitudes and intentions to blood

donation with a larger and more generalizable representative sample to determine a more precise correlation. The target population should include only parents and their dependent 16-year-olds. Additional studies that seek to determine a causal relationship may elaborate on how the parents influence teenage opinions and behaviors and the converse with respect to future interventions. Lastly, more research is needed to explore other factors which may inhibit a teenager from donating blood such as the timing or participation in athletic events, or the time of annual blood drives at school, which may influence responses. Research that seeks to explore these extraneous factors will also help influence future interventions. Continued research related to blood donation attitudes and intentions can help mitigate the potential for future blood supply shortages.

The preliminary findings of the study suggest that parents and teenagers have similar attitudes of blood donation. These results concur with previous research studies that found that teenagers receive health-related information from their parents. In particular, teenagers rely on their mothers for information (Ackard & Neumark-Sztainer, 2001; Ackard et al., 2006). This suggests that when investigating issues pertaining to minors donating blood, it is important to address the parents and ensure that parents and teenagers have similar attitudes and intentions to donate blood.

Future interventions regarding blood donations may be informed through research projects similar to ours, which assessed attitudes and intentions of blood donation. It is important to prevent any foreseeable blood shortages. This requires maintaining a large donor pool of sustained donors. The information provided from this study can provide a point of interception for future interventions— addressing parents and the accompanied minors as a dyad, rather than individual groups.

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## Appendices

## Appendix A. American Red Cross Pre-determined Eligibility Criteria to Donate Blood

**Table A1.** American Red Cross Eligibility Criteria for Blood Donation

| Topic | Eligibility Criteria |
|---|---|
| **Medications and Vaccinations** | |
| *Antibiotics* | • A donor with an acute infection should not donate.<br>• If you have a temperature above 99.5 F, you may not donate. |
| *Immunization, Vaccination* | • Wait 4 weeks after immunizations for Rubella, MMR (Measles, Mumps and Rubella), Chicken Pox and Shingles.<br>• Wait 2 weeks after immunizations for Red Measles (Rubeola), Mumps, Polio (by mouth), and Yellow Fever vaccine.<br>• Wait 21 days after immunization for hepatitis B as long as you are not given the immunization for exposure to hepatitis B.<br>• **Smallpox vaccination and did not develop complications**<br>Wait 8 weeks (56 days) from the date of having a smallpox vaccination as long as you have had no complications. Complications may include skin reactions beyond the vaccination site or general illness related to the vaccination.<br>• **Smallpox vaccination and developed complications**<br>Wait 14 days after all vaccine complications have resolved or 8 weeks (56 days) from the date of having had the smallpox vaccination whichever is the longer period of time. Complications may include skin reactions beyond the vaccination site or general illness related to the vaccination.<br>• **Smallpox vaccination – close contact with someone who has had the vaccine in the last eight weeks and you have since developed skin lesions or symptoms.**<br>Wait 8 weeks (56 days) from the date of the first skin lesion or sore. Complications may include skin reactions or general illness related to the exposure. |
| *Insulin (Bovine)* | • Donors with diabetes who since 1980, ever used bovine (beef) insulin made from cattle from the United Kingdom are not eligible to donate. |
| *Medications* | • Persons on these drugs have waiting periods following |

| | |
|---|---|
| | their last dose before they can donate blood:<br><br>– Accutane, Amnesteem, Claravis or Sotret (isoretinoin), Proscar (finasteride), and Propecia (finasteride) - wait 1 month from the last dose.<br>– Avodart (dutasteride) - wait 6 months from the last dose.<br>– Feldene (piroxicam), no waiting period for donating whole blood.<br>– Coumadin (warfarin) , heparin or other prescription blood thinners- you should not donate since your blood will not clot normally. If you discontinue your treatment with blood thinners, wait 7 days before returning to donate.<br>– Hepatitis B Immune Globulin – given for exposure to hepatitis, wait 12 months after exposure to hepatitis.<br>– Human pituitary-derived growth hormone at any time - you are not eligible to donate blood.<br>– Soriatane (acitretin) - wait 3 years.<br>– Tegison (etretinate) at any time - you are not eligible to donate blood.<br>– Ticlid - wait 14 days after taking this medication before donating platelets by apheresis.<br>– Ticlopidine - wait 14 days after taking this medication before donating platelets by apheresis. |
| ***General Health Considerations*** | |
| *Cold, Flu* | • Wait if you have a fever or a productive cough<br>• Wait if you do not feel well on the day of donation.<br>• Wait until you have completed antibiotic treatment for sinus, throat or lung infection. |
| *Donation Intervals* | • Wait at least 8 weeks between whole blood (standard) donations. |
| *Weight/Height* | • You must weigh at least 110 lbs.<br>• Students who donate at high school drives and donors 18 years of age or younger must also meet additional height and weight requirements for whole blood donation (applies to girls shorter than 5'6" and boys shorter than 5'). |
| ***Medical Conditions*** | |
| *Cancer* | • If you had leukemia or lymphoma, including Hodgkin's Disease and other cancers of the blood, you are not eligible to donate. |

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| *Chronic Fatigue Syndrome* | • You may not donate if you have been diagnosed with chronic fatigue syndrome (CFS), also known as chronic fatigue and immune dysfunction syndrome (CFIDS) or myalgic encephalomyelitis (ME). |
| *CJD, vCJD, Mad Cow Disease* | • If you ever received a dura mater (brain covering) transplant or human pituitary growth hormone, you are not eligible to donate.<br>• Those who have a blood relative who had Creutzfeldt-Jakob disease are also not eligible to donate. |
| *Heart Disease* | • Wait at least 6 months following an episode of angina.<br>• Wait at least 6 months following a heart attack.<br>• Wait at least 6 months after bypass surgery or angioplasty. |
| *Hemochromatosis (Hereditary)* | • American Red Cross does not accept individuals with hemochromatosis as blood donors for other persons at this time. |
| *Hepatitis, Jaundice* | • If you had hepatitis (inflammation of the liver) caused by a virus, or unexplained jaundice (yellow discoloration of the skin), since age 11, you are not eligible to donate blood. This includes those who had hepatitis with Cytomegalovirus (CMV), or Epstein-Barr Virus (EBV), the virus that causes Mononucleosis.<br>• If you ever tested positive for hepatitis B or hepatitis C, at any age, you are not eligible to donate, even if you were never sick or jaundiced from the infection. |
| *Hepatitis Exposure* | • If you live with or have had sexual contact with a person who has hepatitis, you must wait 12 months after the last contact.<br>• Persons who have been detained or incarcerated in a facility for more than 72 consecutive hours (3 days) are deferred for 12 months from the date of last occurrence.<br>• Wait 12 months after receiving a blood transfusion, non-sterile needle stick/body piercing or exposure to someone else's blood.<br>• Wait 12 months following a human bite, in which the skin was broken. |
| *HIV, AIDS* | • You should not give blood if you have AIDS or have ever had a positive HIV test, or if you have done something that puts you at risk for becoming infected with HIV. |

| | |
|---|---|
| | • You are at risk for getting infected if you:<br><br>-have ever used needles to take drugs, steroids, or anything not prescribed by your doctor<br>-are a male who has had sexual contact with another male, even once, since 1977<br>-have ever taken money, drugs or other payment for sex since 1977<br>-have had sexual contact in the past 12 months with anyone described above<br>-received clotting factor concentrates for a bleeding disorder such as --hemophilia<br>-were born in, or lived in, Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Gabon, Niger, or Nigeria, since 1977<br>-since 1977, received a blood transfusion or medical treatment with a blood product in any of these countries, or<br>-had sex with anyone who, since 1977, was born in or lived in any of these countries.<br><br>• You should not give blood if you have any of the following conditions that can be signs or symptoms of HIV/AIDS:<br><br>-unexplained weight loss (10 pounds or more in less than 2 months)<br>night sweats<br>-blue or purple spots in your mouth or skin<br>-white spots or unusual sores in your mouth<br>-lumps in your neck, armpits, or groin, lasting longer than one month<br>-diarrhea that won't go away<br>-cough that won't go away and shortness of breath, or<br>-fever higher than 100.5 F lasting more than 10 days. |
| *Infections* | • If you have a fever or an active infection, wait until the infection has resolved completely before donating blood.<br>• Wait until finished taking antibiotics for an infection (bacterial or viral).<br>• Wait 10 days after the last antibiotic injection for an infection.<br>Those who have had infections with Chagas Disease or Babesiosis are not eligible to donate. |
| *Malaria* | • Wait 3 years after completing treatment for malaria.<br>• Wait 12 months after returning from a trip to an area where malaria is found.<br>• Wait 3 years after living in a country or countries where |

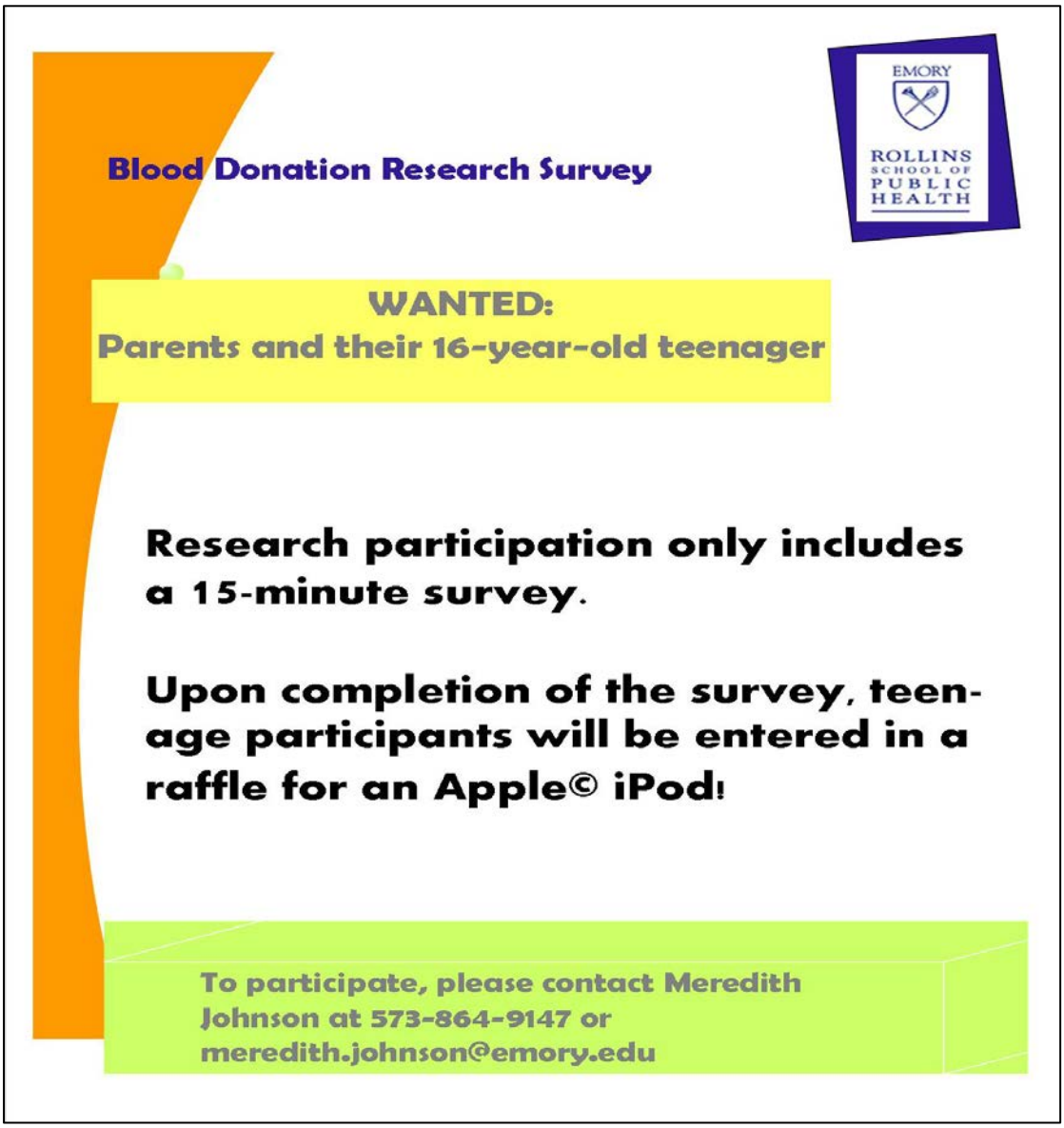
| | |
|---|---|
| | malaria is found. |
| *Sickle Cell* | • Those with sickle cell disease are not eligible to donate. |
| *Skin Disease, Rash, Acne* | • If the skin disease has become infected, wait until the infection has cleared before donating. |
| *Tuberculosis* | • If you have active tuberculosis or are being treated for active tuberculosis you should not donate.<br>• If you are being treated for a tuberculosis infection, wait until treatment is successfully completed before donating. |
| ***Medical Treatments*** | |
| *Blood Transfusion* | • Wait for 12 months after receiving a blood transfusion from another person in the United States.<br>• You may not donate if you received a blood transfusion since 1980 in the United Kingdom (England, Wales, Scotland, Northern Ireland, Channel Islands, Isle of Man, Gibraltar or Falkland Islands).<br>• You may not donate if you received a blood transfusion in certain countries in Africa since 1977. |
| *Dental Procedures and Oral Surgery* | • Wait until finishing antibiotics for a dental infection. Wait for 3 days after having oral surgery. |
| *Organ/Tissue Transplant* | • Wait 12 months after receiving any type of organ transplant from another person.<br>• If you ever received a dura mater (brain covering) transplant, you are not eligible to donate. |
| ***Lifestyle and Life Events*** | |
| *Age* | • You must be at least 17 years old to donate to the general blood supply, or 16 years old with parental/guardian consent, if allowed by state law. |
| *Intravenous Drug Use* | • Those who have ever used IV drugs that were not prescribed by a physician are not eligible to donate. |
| *Piercing (ears, body), Electrolysis* | • Wait 12 months if there is any question whether or not the instruments used were sterile and free of blood contamination. |
| *Pregnancy, Nursing* | • Persons who are pregnant are not eligible to donate. Wait 6 weeks after giving birth. |
| *Tattoo* | • Wait 12 months after a tattoo if the tattoo was applied in a state that does not regulate tattoo facilities. |

| ***Sexually Transmitted Diseases*** | |
|---|---|
| *Venereal Disease* | • Wait 12 months after treatment for syphilis or gonorrhea. |
| ***Travel Outside of the U.S, Immigration*** | |
| *Travel Outside the U.S., Immigration* | • Wait 12 months after travel in an area where malaria is found.<br>• Wait 3 years after living in a country or countries where malaria is found.<br>• Wait 12 months after travel to Iraq.<br>• Persons who have spent long periods of time in countries where "mad cow disease" is found are not eligible to donate.<br>• Persons who were born or lived in certain countries in Western Africa, or who have had close contact with persons who were born in or who lived in certain West African countries are not eligible to donate. |

**Appendix B: Verbal Recruitment Script**

Hello, my name is Meredith. I am a graduate student studying to obtain my Master of Public Health from Emory University. For my thesis project, I am examining blood donation behaviors of guardians and their teenage children. Participation in the research study will assist in gaining further knowledge about improving the blood donation process. Participation is voluntary and will take approximately ten minutes to complete. Would you be willing to complete my research questionnaire about your attitudes towards blood donation and your intention to donate blood?

**Appendix C: Recruitment Flyer**



## Appendix D: Study Questionnaire (Parent Version)

**1. Below is a list of statements that apply to blood donation. Using a scale of 1 to 5, where 1 is 'not important at all' and 5 is 'very important,' please indicate how important each of these statements is to if you are deciding to donate blood.**

| | Not Important | Somewhat Important | Neutral | Important | Very Important |
|---|---|---|---|---|---|
| The convenience of the place for me to donate. …… | 1 | 2 | 3 | 4 | 5 |
| The skill of the staff …… | 1 | 2 | 3 | 4 | 5 |
| The way the staff treats me. ……..... | 1 | 2 | 3 | 4 | 5 |
| If I had a previously bad experience. …….. | 1 | 2 | 3 | 4 | 5 |
| The amount of time it takes to donate. ….. | 1 | 2 | 3 | 4 | 5 |
| Finding a nearby donation center. …..... | 1 | 2 | 3 | 4 | 5 |
| How hard it is to find my veins. ……..... | 1 | 2 | 3 | 4 | 5 |
| I fear I may feel sick during or after donating (nausea, dizziness). ……... | 1 | 2 | 3 | 4 | 5 |
| I am afraid of needles or dislike the sight of blood. ……... | 1 | 2 | 3 | 4 | 5 |
| I am afraid it hurts……..…… | 1 | 2 | 3 | 4 | 5 |
| I cannot donate due to medical reasons. … | 1 | 2 | 3 | 4 | 5 |
| I cannot donate because of travel to other foreign countries. ……... | 1 | 2 | 3 | 4 | 5 |
| I learned that I cannot donate because of travel to the UK or Europe. …….. | 1 | 2 | 3 | 4 | 5 |
| I am afraid I will be deferred. ……... | 1 | 2 | 3 | 4 | 5 |
| I am unaware of the need for blood. ……... | 1 | 2 | 3 | 4 | 5 |
| I am never asked to give blood. ……... | 1 | 2 | 3 | 4 | 5 |

**2. Please circle the number that best fits your agreement with the following statements regarding blood donation.**

I intend to give blood during the next 6 months.

Likely 1 2 3 4 5 6 7 Unlikely

I will try to give blood.

Probable 1 2 3 4 5 6 7 Improbable

I have decided to give blood

Agree 1 2 3 4 5 6 7 Disagree

**3. Some people have different opinions of what blood donation would mean to them. Below is a list of how blood donation may be viewed. Please complete the following sentence with one response from each line that best describes what blood donation means to you.**

**For me, giving blood would be…**

| | | | | |
|---|---|---|---|---|
| Very self-important | Self-Important | Neutral | Socially-minded | Very socially-minded |
| Very bad | Bad | Neutral | Good | Very good |
| Very risky | Risky | Neutral | Safe | Very Safe |
| Very worthwhile | Worthwhile | Neutral | Not worthwhile | Not at all worthwhile |
| Very wise | Wise | Neutral | Foolish | Very foolish |
| Very pleasant | Pleasant | Neutral | Unpleasant | Very unpleasant |
| Very annoying | Annoying | Neutral | Enjoyable | Very enjoyable |
| Very scary | Scary | Neutral | Not scary | Not at all scary |
| Very reassuring | Reassuring | Neutral | Not reassuring | Not at all reassuring |

**4. To what extent do you agree/disagree with each of the following statements?**

| | Strongly Disagree | Disagree | Neither disagree nor agree | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Thinking about blood donation is a waste of time for me, it's not my problem. | 1 | 2 | 3 | 4 | 5 |
| As far as I am concerned there is no need for me to give blood. | 1 | 2 | 3 | 4 | 5 |
| I don't give blood, but don't see it as something I have to change. | 1 | 2 | 3 | 4 | 5 |
| I have done something about my decision to donate blood. | 1 | 2 | 3 | 4 | 5 |
| Anyone can talk about giving blood, I've actually done something about it. | 1 | 2 | 3 | 4 | 5 |
| I have been a blood donor for at least 18 months. | 1 | 2 | 3 | 4 | 5 |
| I just give blood out of habit, I don't really think about it. | 1 | 2 | 3 | 4 | 5 |
| I now give blood on a regular basis. | 1 | 2 | 3 | 4 | 5 |
| Even though I don't always make it, at least I try to go and give blood. | 1 | 2 | 3 | 4 | 5 |
| I have recently given blood. | 1 | 2 | 3 | 4 | 5 |
| I have made a commitment to give blood in the next month. | 1 | 2 | 3 | 4 | 5 |
| The thought of blood donation has been bothering me, but now I am actually doing something about it. | 1 | 2 | 3 | 4 | 5 |
| I think I might want to give blood. | 1 | 2 | 3 | 4 | 5 |

**5. Have you ever been told by a blood donation service that you may <u>not</u> donate blood?**

☐ Yes

☐ No

If yes, why? _____

**6. Have you ever successfully donated blood?**

☐ Yes

☐ No

If yes, when? _____

**7. Do you talk to your teenager about donating blood?**

☐ Often

☐ Sometimes

☐ Rarely

☐ Never

**8. Would you allow your teenager to donate blood?**

Yes

No

**9. What is your date of birth?** _____/_____/ 19____
month/ day/ year

**10. What is your gender?**

☐ Female

☐ Male

**11. What ethnic group do you most identify with?**

☐ American Indian

☐ Asian

☐ Black/Non-Hispanic

☐ Hispanic

☐ White

☐ Other (please specify)_____

**5. What is the highest grade or degree that you have completed?**

☐ Less than high school

☐ Completed high school or equivalent GED

☐ Completed college

☐ Professional degree (MA, MS, ME, MD, PhD, LLD, etc.)

**6. What is your current marital status?**

☐ Never married/single

☐ Married

☐ Divorced/separated

## Appendix E: Study Questionnaire (Teenage Version)

**1. Below is a list of statements that apply to blood donation. Using a scale of 1 to 5, where 1 is 'not important at all' and 5 is 'very important,' please indicate how important each of these statements is to if you are deciding to donate blood.**

| | Not Important | Somewhat Important | Neutral | Important | Very Important |
|---|---|---|---|---|---|
| The convenience of the place for me to donate. …… | 1 | 2 | 3 | 4 | 5 |
| The skill of the staff …… | 1 | 2 | 3 | 4 | 5 |
| The way the staff treats me. ……..... | 1 | 2 | 3 | 4 | 5 |
| If I had a previously bad experience. …….. | 1 | 2 | 3 | 4 | 5 |
| The amount of time it takes to donate. ….. | 1 | 2 | 3 | 4 | 5 |
| Finding a nearby donation center. …..... | 1 | 2 | 3 | 4 | 5 |
| How hard it is to find my veins. ……..... | 1 | 2 | 3 | 4 | 5 |
| I fear I may feel sick during or after donating (nausea, dizziness). ……... | 1 | 2 | 3 | 4 | 5 |
| I am afraid of needles or dislike the sight of blood. ……... | 1 | 2 | 3 | 4 | 5 |
| I am afraid it hurts.……..…… | 1 | 2 | 3 | 4 | 5 |
| I cannot donate due to medical reasons. … | 1 | 2 | 3 | 4 | 5 |
| I cannot donate because of travel to other foreign countries. ……... | 1 | 2 | 3 | 4 | 5 |
| I learned that I cannot donate because of travel to the UK or Europe. …….. | 1 | 2 | 3 | 4 | 5 |
| I am afraid I will be deferred. ……... | 1 | 2 | 3 | 4 | 5 |
| I am unaware of the need for blood. …….. | 1 | 2 | 3 | 4 | 5 |
| I am never asked to give blood. ……... | 1 | 2 | 3 | 4 | 5 |

**2. Please circle the number that best fits your agreement with the following statements regarding blood donation.**

I intend to give blood during the next 6 months.

Likely 1 2 3 4 5 6 7 Unlikely

I will try to give blood.

Probable 1 2 3 4 5 6 7 Improbable

I have decided to give blood

Agree 1 2 3 4 5 6 7 Disagree

**3. Some people have different opinions of what blood donation would mean to them. Below is a list of how blood donation may be viewed. Please complete the following sentence with one response from each line that best describes what blood donation means to you.**

**For me, giving blood would be…**

| | | | | |
|---|---|---|---|---|
| Very self-important | Self-Important | Neutral | Socially-minded | Very socially-minded |
| Very bad | Bad | Neutral | Good | Very good |
| Very risky | Risky | Neutral | Safe | Very Safe |
| Very worthwhile | Worthwhile | Neutral | Not worthwhile | Not at all worthwhile |
| Very wise | Wise | Neutral | Foolish | Very foolish |
| Very pleasant | Pleasant | Neutral | Unpleasant | Very unpleasant |
| Very annoying | Annoying | Neutral | Enjoyable | Very enjoyable |
| Very scary | Scary | Neutral | Not scary | Not at all scary |
| Very reassuring | Reassuring | Neutral | Not reassuring | Not at all reassuring |

**4. To what extent do you agree/disagree with each of the following statements?**

| | Strongly Disagree | Disagree | Neither disagree nor agree | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Thinking about blood donation is a waste of time for me, it's not my problem. | 1 | 2 | 3 | 4 | 5 |
| As far as I am concerned there is no need for me to give blood. | 1 | 2 | 3 | 4 | 5 |
| I don't give blood, but don't see it as something I have to change. | 1 | 2 | 3 | 4 | 5 |
| I have done something about my decision to donate blood. | 1 | 2 | 3 | 4 | 5 |
| Anyone can talk about giving blood, I've actually done something about it. | 1 | 2 | 3 | 4 | 5 |
| I have been a blood donor for at least 18 months. | 1 | 2 | 3 | 4 | 5 |
| I just give blood out of habit, I don't really think about it. | 1 | 2 | 3 | 4 | 5 |
| I now give blood on a regular basis. | 1 | 2 | 3 | 4 | 5 |
| Even though I don't always make it, at least I try to go and give blood. | 1 | 2 | 3 | 4 | 5 |
| I have recently given blood. | 1 | 2 | 3 | 4 | 5 |
| I have made a commitment to give blood in the next month. | 1 | 2 | 3 | 4 | 5 |
| The thought of blood donation has been bothering me, but now I am actually doing something about it. | 1 | 2 | 3 | 4 | 5 |
| I think I might want to give blood. | 1 | 2 | 3 | 4 | 5 |

**7. Have you ever been told by a blood donation service that you may <u>not</u> donate blood?**

☐ Yes

☐ No

If yes, why? _____

**8. Have you ever successfully donated blood?**

☐ Yes

☐ No

If yes, when? _____

**9. Do you talk to your parent(s) about donating blood?**

☐ Often

☐ Sometimes

☐ Rarely

☐ Never

10. **What is your date of birth?** _____/_____/ 19____
month/ day/ year

**11. What is your gender?**

☐ Female

☐ Male

**12. What ethnic group do you most identify with?**

☐ American Indian

☐ Asian

☐ Black/Non-Hispanic

☐ Hispanic

☐ White

☐ Other (please specify)_____

**13. What is the highest grade that you have completed?**

☐ 9th grade

☐ 10th grade

☐ 11th grade

☐ 12th grade

**Appendix F: Ratings of Potential Barriers**

Responses of 'not important' or 'not important at all' were categorized as Low Importance, while response of 'important' or 'very important' were categorized as High Importance for parents and teenagers. The results of such categorizations are provided in Table F1 and Table F2.

**Table F1.** Frequency of Parental Ratings for Barriers to Blood Donation

| | Low Importance n (%) | Neutral n (%) | High Importance n (%) |
|---|---|---|---|
| **a. The convenience of the place for me to donate.** | 1 (3.8) | 6 (23.1) | 19 (73.1) |
| **b. The skill of the staff.** | 0 (0.0) | 4 (15.4) | 22 (84.6) |
| **c. The way the staff treats me** | 0 (0.0) | 1 (4.0) | 24 (96.0) |
| **d. If I had a previously bad experience** | 4 (16.0) | 4 (16.0) | 17 (68.0) |
| **e. The amount of time it takes to donate.** | 4 (16.0) | 8 (32.0) | 13 (52.0) |
| **f. Finding a nearby donation center.** | 2 (7.7) | 9 (34.6) | 15 (57.7) |
| **g. How hard it is to find my veins** | 3 (11.5) | 4 (15.4) | 19 (73.1) |
| **h. I fear I may feel sick during or after donation (nausea, dizziness)** | 7 (28.0) | 5 (20.0) | 13 (52.0) |
| **i. I am afraid of needles or dislike the sight of blood** | 15 (57.7) | 5 (19.2) | 6 (23.1) |
| **j. I am afraid it hurts** | 18 (69.2) | 3 (11.5) | 5 (19.2) |
| **k. I cannot donate due to medical reasons** | 14 (56.0) | 4 (16.0) | 7 (28.0) |
| **l. I cannot donate because of travel to other foreign countries** | 13 (54.2) | 2 (8.3) | 9 (37.5) |
| **m. I learned that I cannot donate because of travel to the UK or Europe** | 15 (65.2) | 3 (13.0) | 5 (21.7) |
| **n. I am afraid I will be deferred** | 15 (65.2) | 4 (17.4) | 4 (17.4) |
| **o. I am not aware of the** | 17 (65.4) | 4 (15.4) | 5 (19.2) |

| | | | |
|---|---|---|---|
| **need for blood** | | | |
| **p. I am never asked to give blood** | 15 (57.7) | 7 (26.9) | 4 (15.4) |

**Table F2.** Frequency of Teenage Ratings for Barriers to Blood Donation

| | Low Importance n (%) | Neutral n (%) | High Importance n (%) |
|---|---|---|---|
| **a. The convenience of the place for me to donate.** | 1 (3.4) | 5 (17.2) | 23 (79.3) |
| **b. The skill of the staff.** | 1 (3.4) | 2 (6.9) | 26 (89.7) |
| **c. The way the staff treats me** | 1 (3.4) | 5 (17.2) | 24 (79.3) |
| **d. If I had a previously bad experience** | 4 (13.8) | 9 (32.1) | 15 (53.6) |
| **e. The amount of time it takes to donate.** | 6 (20.7) | 13 (44.8) | 10 (34.5) |
| **f. Finding a nearby donation center.** | 2 (6.9) | 13 (44.8) | 14 (48.3) |
| **g. How hard it is to find my veins** | 5 (17.2) | 9 (31.0) | 15 (51.7) |
| **h. I fear I may feel sick during or after donation (nausea, dizziness)** | 14 (50.0) | 5 (17.9) | 9 (32.1) |
| **i. I am afraid of needles or dislike the sight of blood** | 18 (62.1) | 5 (17.2) | 6 (20.3) |
| **j. I am afraid it hurts** | 17 (58.6) | 7 (24.1) | 5 (17.2) |
| **k. I cannot donate due to medical reasons** | 19 (76.0) | 2 (8.0) | 4 (16.0) |
| **l. I cannot donate because of travel to other foreign countries** | 18 (75.0) | 2 (8.3) | 4 (16.7) |
| **m. I learned that I cannot donate because of travel to the UK or Europe** | 19 (76.0) | 2 (8.0) | 4 (16.0) |
| **n. I am afraid I will be deferred** | 20 (74.1) | 4 (14.8) | 3 (11.1) |
| **o. I am not aware of the need for blood** | 20 (74.1) | 4 (14.8) | 3 (11.1) |
| **p. I am never asked to give blood** | 9 (31.0) | 13 (44.8) | 7 (24.1) |