Gender Differences and Volunteering

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Note to reader:

My early research emphasis was on volunteer psychology and behavior, from a marketing perspective. The more familiar with the literature I became, the more I found that study after study reported differences between females and males in their findings. A study on these differences was rare. Rather, studies on various topics would conduct an ad hoc group difference test of their sample (after hypothesis testing on the main study topics) and often report significant gender differences on key variables. These significant gender differences were often noted, but not explained or explored.

This was also the case in my own program of research. Regardless of the focal constructs being examined, one often uses gender as a control variable to examine possible heterogeneity in the data. In hindsight, it was obvious that gender was acting as a moderator in the construct relationships under investigation. A nagging motivation to understand why there were these ad hoc gender differences would not let me be. I wanted to have a sense that I understood the nature of these gender differences, not simply report them as a disinterested observation.

In searching out the explanation in third-sector-related research, there was a social learning account of gender differences. The idea was that human behavior is learned. If female tend to volunteer in greater proportions than males, it was because females are taught to be more nurturing which is expressed in volunteering. This sounded plausible if not overly simplistic. Many of the gender differences in volunteering, for example, were consistent across cultures. Many men volunteer, many women do not volunteer; however, women *tend* to volunteer in greater numbers. Many men are quite nurturing, while some women are not nurturing. Clearly, the reality of gender differences in volunteering is more complex. Thus, my motivation to understand gender differences in volunteering included reviewing the emerging literature in the burgeoning neuroscience discipline.

The augmentation of relevant findings in neuroscience with the prior literature in volunteerism markedly aided my understanding of gender differences in volunteering. Two publications resulted. I published a neuroscience-driven conceptual paper as a book chapter and two journal articles that tested the predictive accuracy of neuroscience-driven hypotheses on gender differences in volunteering. I was quite pleased with the results and believe my understanding has been greatly enhanced.

I hope the following paper will serve as an efficient review of some of the relevant neuroscience literature that will help to inform your own research.

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Introduction

In the past 30 years, the field of neuroscience has experience tremendous growth (Sengupta, 1989; Rockstad-Rex & Magistretti, 2012). The recent knowledge gains in neuroscience have increased our understanding of the human mind. Social scientists have an opportunity to incorporate this knowledge into their research models and explanatory theories to improve theory construction and predictive accuracy.

With respect to social scientists working in the third sector contexts such as civic participation, voluntary action, or philanthropy; there is a great opportunity to improve the quality of research by refining legacy theoretical models with recent discoveries from the neurosciences.

Even though social sciences share the prejudices and bias of the general population, if we are to be effective, it is incumbent upon us to have minds that are open to new possibilities that may conflict with prior discipline-specific perceptual lenses. Rather than being quick to detect possible conflicts with our opinions and views, we must suspend judgment of new ideas until the ideas are fully presented.

It is obvious that humans interact with their external world. Nature and nurture merge and mingle in a complex interaction that influences an individual's present and future responses to an intricate, fluctuating world. Simply put, psychology and sociology are complementary, not mutually exclusive.

Sex Differences

Sexual dimorphism refers to any difference, morphological (i.e., form and structure) or behavioral, between males and females of the same species. The following discussion will be limited to *human* male and female differences. These differences refer to average differences between the sexes. For example, men, on average, are taller than women, although an individual woman may be taller than an individual man. Some women are taller than some men, but, on average, men tend to be taller than women. The following discussion refers to average differences between the sexes, not absolute differences between all members of either sex.

There are other human sexual dimorphic examples. Men's skin is thicker and oilier than women's skin. Women tend to have smaller waist in comparison to their hips than do men. In men, the second digit (index finger) tends to be shorter than the fourth digit (ring finger), while in females the second tends to be longer than the fourth. Women tend to have lower blood pressure and tend to live longer than men (Gender Differences 2007). Among the differences between males and females, the following discussion is limited to those that may have implications for researchers examining issues pertaining to recruiting and retaining volunteers in the various types of nonprofit organizations.

Sex has long been used by commercial marketers as a segmentation variable for target marketing purposes (Putrevu 2001; Voss and Cova 2006). Consumer behavior researchers have produced a stream of research examining sex differences in consumer information processing (Dempf, Laczniak, and Smith 2006; Meyers-Levy 1989) and consumer choice criteria (Fischer and Arnold 1994; Holbrook 1986).

Nonprofit marketers are giving more attention to sex as a segmentation variable for target marketing purposes. In the area of fund raising, early exploratory research in the telemarketing context found that females tend to pledge more often, while males tend to pledge greater amounts. Also, male fund raisers calling male donors were most productive while female fund raisers calling female donors was least productive (Smith 2006). In other areas of fund raising, greater awareness of sex differences is generating interest (Capek 2001; Newman 1995).

In regards to volunteering, females generally volunteer in greater numbers than males (Wymer and Samu 2002). There are other sex differences in volunteering with regards to the amount of time volunteering, the frequency of volunteering, motives for volunteering, interest in volunteering, the nature of the volunteer organization, and volunteer commitment (Mesch, Rooney, Steinberg, and Denton 2006; Wymer and Samu 2002).

There are several reasons to believe that sex differences in volunteer behavior are an especially timely and important topic.

1. Females are participating in the paid labor force in ever greater numbers, decreasing their availability for volunteer participation (Wymer and Samu 2002)
2. Females are more likely to care for elderly relatives. As the population ages, females' discretionary time will be further consumed by elder care (Taniguchi, 2006).
3. Voluntary participation is declining, especially among young adults and teenagers, and especially for females (even though, overall, females still volunteer in greater numbers) (Bureau of Labor Statistics 2007).
4. Male voluntary participation in traditionally male emergency services, like volunteer firefighting, is declining, and localities are searching for ways to recruit more females into these roles (Wood 2002).

While the research of sex differences on consumer behavior has progressed slowly, and at a rudimentary level, this has not been the case in other fields. Sub-disciplines of biology, psychology, endocrinology, and especially neuroscience have greatly added to our understanding of human sexual dimorphism in the past 15 years (Baron-Cohen 2003; Brizendine 2006; Kimura 2000; Sax 2005).

The discussion that follows will serve to highlight those sex differences that (1) have received strong research support (i.e., robust and replicated studies) in various scientific fields, and (2) may have implications for nonprofit marketers and researchers in the various areas of nonprofit marketing, with an emphasis on volunteer recruitment and retention.

Before proceeding, however, it should be pointed out that nothing written in this work is intended to imply that sex differences are absolute, all inclusive, and categorical. As stated previously, sex differences as used in the following discussion refers to average differences between males and females. Some sex differences are greater than others. Some sex differences are quite small (Kimura 2002). There is overlap between sexes, just as two normal bell curves may have different means, but will overlap at the leading and lagging tales (Baron-Cohen 2003, 2004; Hines 2004). The brains of males and females are more similar than different. However, these differences may enhance our understanding of cognitive and behavioral sex differences (Onion 2005). Sex differences may demonstrate that males and females are not the same, on average, on various characteristics, but never that they are not equal (Pool 1994). Nothing that follows in this work is intended to imply, nor should it be inferred by the reader, that females or males are better or superior, worse or inferior, in any respect.

The Biology of Sexual Dimorphism

Sexual differences begin at conception. Each cell in the developing fetus has a nucleus. Each nucleus has 23 pairs of chromosomes. The twenty-third pair is the sex chromosome. If the twenty-third pair is coded X and Y, the cell is male; if it is coded X and X, the cell is female (DNA Tutorial 2007). The presence of a Y chromosome in the twenty-third pair means that the fetus will develop testes; while two X's means that the fetus will develop an ovary (Maddox 2003).

The first crucial event shaping sex differences occurs in utero to the developing fetus. Early in the second trimester, male fetuses' testicles begin producing large quantities of testosterone. This masculinizes male fetuses' genitalia and their brains, affecting their brain's neural structure. The surge of male hormone triggers cell death in some regions of the brain and fosters cell development in other regions (Onion 2005; Spratt 1999). By the third trimester, males and females have some different brain structures. For the female fetus, the much less quantity of testosterone (a small quantity comes from the mother's blood through the placenta) is not available to influence the development of genitalia or the brain. The effect of fetal testosterone reorganizes the brain permanently (Kimura 2000; Udry 1994). This structural brain difference between males and females influences cognition and behavior (Kimura 2002).

The second crucial period shaping sex differences occurs during puberty. Sex hormone surges cause the well-known anatomical changes, and also cause changes in neural structures begun during the prenatal period. These two periods produce sexual dimorphism and sex-dimorphic behavior. Of the two periods shaping sex dimorphism, prenatal exposure to testosterone is the most influential (Baron-Cohen 2005; Brizendine 2006; Moir and Jesel 1991; Udry 1994).

More disclaimers. The preceding discussion presents facts that substantiate a biological basis for sexual dimorphism. This is not to say that social influences have no influences on male/female behavior. While biology is the basis for sex differences, social influences

interact with and reinforce sex dimorphic behaviors and influence them throughout a lifetime (Baron-Cohen 2003; Hines 2004; Mealey 2000; Rhoads 2004).

Brain Structure and Brain Function

The prior discussion briefly described the biological origins of structural differences between the brains of the average male and the average female. The sculpting of the brain in utero by hormonal influences and resulting morphological (structural) differences are widely documented in the scientific literature (Cahill 2005; Sabbatini 1997; Tyre and Scelfo 2006; Wizemann and Pardue 2001). The purpose of this work is to propose how sex differences may provide insights to nonprofit marketers and nonprofit marketing researchers. Therefore, the following discussion shall focus upon functional differences derived from sexual dimorphic structural differences. Some examples of these functional differences are that females tend to be higher in empathy, verbal skills, social skills, and security-seeking while males tend to be higher in independence, dominance, spatial and mathematical skills, and rank-related aggression (Wilson 2000). The following organization of this work will present sexual dimorphic functional differences and their potential managerial implications. A series of propositions will be embedded into the following discussion to stimulate further research into this promising area of inquiry.

Functional Differences

General Sex Differences: Systemizing and Empathizing

The female brain is organized for empathy. The male brain is organized for understanding and building systems (Baron-Cohen 2003). Empathizing is the drive to identify another person's emotions and thoughts, and to respond to them with an appropriate emotion. Baby girls, as young as 12 months old, respond more empathetically to the distress of other people than boys. Women also show more comforting behavior than men (Baron-Cohen 2003, 2005; Zahn-Waxler, Radke-Yarrow, and Chapmen 1992).

There are two components of empathy: the cognitive component and the affective component. The cognitive component of empathy deals with understanding another person's feelings and being able to take their perspective. The affective component of empathy deals with controlling the observer's appropriate emotional response to another person's emotional state (Baron-Cohen 2003).

Systemizing is the drive to analyze, explore and construct a system. The systemizer intuitively figures out how things work, or extracts the underlying rules that govern the behavior of a system (Baron-Cohen 2003). Not all males have the typical male brain type. Not all females have the typical female brain type (Baron-Cohen 2003, 2004). About 15 percent of women have typical male brains and about 15 percent of males have typical female brains (Moir and Jessel 1991). Baron-Cohen (2005) provides different proportions. He estimates that about 20 percent of males have female brain types and about 40 percent of females have male brain types, and Baron-Cohen also proposes that some individuals have a balanced male/female brain. The point is that one cannot determine an individual's brain type by only knowing his or her sex.

Females are better at discerning when it is appropriate to suppress the expression of an emotion so as to avoid hurting someone else's feelings. Females have been found to be better at judging emotion from facial expressions than males, in different types of tests and with subjects in different cultures (Kimura 2000). In terms of valuing social relationships, females tend to value altruistic, reciprocal, and supportive relationships. Males tend to value power, politics, competition, and affirmation of their social status (Baron-Cohen 2003).

Specific Sex Differences: Language, Memory, Emotions, Vision, and Hearing

The most significant differences between male and female brains occur in regions involved in language, memory, emotion, vision, hearing and navigation (Cahill 2005). Since navigational differences do not have a clear implication for volunteer program managers or nonprofit scholars, they will not be discussed further.

Females, on average, are more socially interested than males, on average. Females' brains are structured to be interested in faces and interpreting expressions (Sax 2005). The female visual system is optimized to discern colors and textures. Females also have wider peripheral vision (Pease and Pease 2000; Sax 2005). Females tend to hear better than males, with brains having the ability to categorize sounds and differentiating tone changes in voice volume and pitch (Moir and Moir 1996; Pease and Pease 2000).

Males tend to be interested in things. Females tend to be interested in people. In studies examining what newborns and toddlers attend to, males' attention is drawn to objects and shapes. Females' attention is drawn to faces (Baron-Cohen 2005; Wizemann and Pardue 2001). Baron-Cohen (2003) conducted experiments with newborn infants using mobiles placed above each infant's head, one mobile was the image of a human face, and the other mobile was a geometric shape. Trained observers, without knowing the sex of the infants, monitored the infants' observation of the mobiles. Male infants observed the geometric shape. Female infants observed the human face.

In another study, mothers and their toddlers (male or female) were put in a room with several toys. Before the experiment, mothers were instructed to prevent the toddler from picking up a toy nonverbally if possible. Before the girls picked up the toy, they would look at their mothers, who would look at their daughters disapprovingly. None of the toddler females picked up the toy. When the boys noticed the toy, they did not look at their mothers, and, even after their mothers verbally warned them, all of the boys picked up the toys. This experiment highlights the verbal fluency and empathy of females as well as the more impulsive and self-directed behavior of males (Sax 2005).

Females tend to have superior language abilities and verbal dexterity than males (Cahill 2005; Rhoads 2004). When conversing, females tend to provide more facial expressions and more reactions (Glass 1992; Hall 1990). Coupled with the average female language superiority, female brains are structured in a manner than allows for more accessible emotional processing and greater emotional integration with discourse (Brizendine 2006; Pease and Pease 2000). The superior female language skills and emotional acuity demonstrates itself in the daily difference of communication intensity between males and

females. Each day, the average female utters 6,000 to 8,000 spoken words (males, 2,000 to 4,000), makes 2,000 to 3,000 vocal sounds (males, 1,000 to 2,000), and uses 8,000 to 10,000 gestures, facial expressions, head movements and other body language signals (males, 2,000 to 3,000). In total, the average female communicates each day about 16,000 to 21,000 verbal, vocal, and body messages; whereas, the average male sends out about 5,000 to 9,000 signals (Hall 1990; Moir and Moir 1996; Pease and Pease 2,000).

In regards to emotions, it is more difficult for females to separate emotion from reason because of the way in which the female brain is organized. The female brain has emotional capacities on both sides of the brain, plus there is more information exchanged between the two sides of the brain (thicker corpus callosum, giving more connections between the two sides of the brain). The emotional side is more integrated with the verbal side of the brain (Moir and Jessel 1991). Males have their emotional responses residing in the right side of the brain (Cahill 2005, Moir and Jessel 1991).

In summary, on average, women are more able than men to perceive minor variations in facial expressions, tone of voice, body language, and other types of interpersonal communication (Hall 1990; Moir and Jessel 1991). The typical female brain is organized such that emotions are accessible to language centers and processed at a higher order level than in the typical male brain. Females tend to be more aware of their emotions and their discourse is more often influenced by emotions and concerned with emotions than male discourse (Kimura 2000; Moir and Jessel 1991).

Propositions

P1: Volunteer recruitment appeals targeting females would be more effective if using video and audio elements that take advantage of greater female perceptual abilities.

P2: Prospective female volunteers are likely to be more influenced by appeals that use facial close-ups so that actors' facial expressions can be used to communicate more emotional and nonverbal information to female audience members.

P3: Radio spots targeted to females should use more emotive tonal voice qualities and discourse so that females' tendencies toward more discerning hearing, emotional sensitivity, and greater empathizing will derive more information, attend more closely, and be more influenced than more bland, more monotone, and more rational messages.

P4: Since females tend to have greater empathy than males, they are more likely to be influenced by appeals showing human distress.

P5: Since males have less ability than females to discern subtle facial expressions and nonverbal message, recruitment appeals targeting males should make their appeals focused and direct. For males, the message should be explicit.

Stress, Aggression, and Risk-Taking

Different levels of estrogen, cortisol and dopamine may cause females to be more stressed by emotional conflict than males (Brizendine 2006). “A few unpaid bills can set off a cascade of hormones in a woman that can catapult her into a fear of impending catastrophe, a reaction triggered in men only by physical danger” (Tyre and Scelfo 2006, p. 46).

As a result of testosterone exposure *in utero*, the orbital frontal cortices are larger in males than in females. This brain region is known to be connected with aggressive behavior (Stein 2002). Males tend to be more aggressive across cultures (Hines 2004). Males are more physically aggressive than females because they are less able to control those impulses resulting from anger (Campbell 2002). The amygdala, a part of the brain that responds to emotionally arousing information, is larger in males than in females. The orbitofrontal cortex, a region of the brain associated with regulating emotions, is larger in females than in males (Cahill 2005). Male brains are structured to react more to emotional-evoking stimuli (increased adrenalin), while males are less able to process and monitor emotions (smaller orbitofrontal cortex), and, with much higher testosterone levels, are more likely to respond physically and aggressively to the evoked stress. This is not to suggest that males cannot control their behavior, but that it requires more effort because males have a greater tendency toward aggression and impulsivity.

While the negative effects of a male brain structure and proportionally high (compared to females) levels of testosterone are apparent by such characteristics as aggression and impulsivity, there are also positive effects. For example, males respond to stress differently than females. Females’ response to stress is directed by the parasympathetic system which causes unpleasant, nauseated feelings. Males’ response to stress is directed from the sympathetic system, giving a “thrill” feeling (Sax 2005). Males take greater risks than females. They take even more risks in the presence of other males. Boys are more likely to do something dangerous in the presence of other boys (Sax 2005). Boys like challenges from their peers and seek them out (Baucom, Besch, and Callahan 1985; Maccoby 1998). Of child pedestrians killed or injured on the roads, boys outnumber girls by two to one (Pease and Pease 2000).

Males enjoy risk taking more than females. Males find the thrill of risk-taking pleasurable; females do not. For males, danger is exhilarating. For females, danger is fearful (Sax 2005). Males are more likely than females to assume risk, especially physical risk (Rhoads 2004). Levels of testosterone are correlated with fearlessness (Navarro 2001). Males prefer and respond well to difficult challenges (Browne 1995). Males are more likely than females to risk their lives to rescue others (Johnson 1996; Morin 1997).

P6: Males are more likely than females to attend to and respond more favorably to volunteer recruitment appeals that emphasize physical risk and danger in volunteering.

P7: Males are more likely than females to prefer volunteer roles that assume some level of risk-taking and danger.

P8: Males are more likely than females to respond to a volunteer appeal for a potentially risky or dangerous volunteer task when asked in the presence of others of the same sex.

Infants and Children

Compared to men, women tend to me more motivated to reproduce (Hrdy 1999; Rhoads 2004). Reproducing refers to the conception and parenting of a child. Numerous studies have found that females are more attracted to infants and children, they are more motivated to spend more time caring for infants and children, and females are more likely to feel that infants and children are important to their personal happiness (Rhoads 2004).

Oxytocin, a hormone linked to nurturing behavior, promotes a calm, relaxed emotional state. In men, oxytocin is released during orgasm. In women, it is released in large quantities during pregnancy and breastfeeding (Rhoads 2004). In a study of virgin female monkeys, injection of oxytocin resulted in maternal behavior (Hrdy 1999). Human females have more neural receptors for oxytocin than men and this number increases further during pregnancy (Hrdy 1999; Moir and Moir 1996).

In addition to the stronger desire for parenthood (Rhoads 2004), females are also more likely than males to seek out contact with infants (Maccoby 1998). Females are more likely to look after a baby (Sax 2005). Progesterone is released when a woman sees a baby. Progesterone is a hormone that releases parental and nurturing feelings. Men do not have this experience (Pease and Pease 2000). Females find it more pleasurable to care for infants (Ehrensaft 1990).

Among children, girls prefer more play parenting. They, like women, are typically more responsive to infants and young children than males (Sax 2005; Geary 1998). Boys, in play behavior, prefer inanimate mechanical objects (Geary 1998).

Mothers spend more time with their children than do fathers (Rhoads 2004). These sex differences in nurturing behaviors occur very early, before socialization could influence behavior (Blum 1997; Fisher 199; Geary 1998). Increases in estrogen and progesterone, which do not occur in males, are linked to females' interest in infants (Fisher 1999; Maccoby 1998). Bonding and nurturing instincts in males are weaker than in females (Hrdy 1999). Mothers of young children tend to be more involved in their children's lives and feel a stronger bond with their young children than do fathers (Ambert 1999; Tooley 2002).

P9: Females will be more attentive than males to volunteer recruitment appeals that use sights and sounds of infants.

P10: Females will have more favorable attitudes and better recall than males for recruitment appeals that use sights and sounds of infants.

P11: Females will have a stronger preference than males for volunteer roles involving the care of infants and children.

P12: Females will have a stronger preference than males for volunteer roles in organizations with missions that help infants and children.

Social Differences

Sexual dimorphism with respect to social relationships shall be discussed in this section. The social relationships of children will be presented, followed by a discussion of adult social relationships.

At the earliest ages in which boys are girls are developmentally mature enough to engage in social play, girls prefer to play with girls; boys prefer to play with other boys (Geary 1998; Hines and Kaufman 1994).

Boys engage in more physical, rough-and-tumble play. Boys are more competitive and enjoy group level competitive play. Boys enjoy playing in a larger physical space that allows for the physicality of types of play that they enjoy. Boys prefer inanimate mechanical objects (vehicles and weapons) in their play. They enjoy taking things apart and putting them back together (experimental manipulation). The male brain's spatial ability helps boys excel at motor skills. Their targeting, throwing, and intercepting abilities are benefited (Kimura 2000). The sociodramatic play of boys focuses more on themes associated with power, dominance, and aggression (Geary 1998; Hines 2004). Males' rough play as boys teaches them the rules of male social behaviors and makes them less likely to be violent as adults (Sax 2005).

Girls engage in less competitive, more socially interactive play. Girls prefer dolls, doll clothes, cosmetics and dress-up items, and household toys (Berenbaum and Hines 1992; Hines and Kaufman 1994). Girls enjoy play parenting; they are more responsive to infants and young children than males. Sociodramatic play of girls focuses on family-related themes, such as taking care of children (Geary 1998). Generally speaking, boys are interested in things and how they work. Girls are interested in people and relationships (Pease and Pease 2000).

In addition to play behavior, social relationships also differ. Females are more consistently communal, manifesting greater empathy, more concern for the well-being of other girls, more nurturing, greater intimacy, and greater social-emotional support. Males are more consistently instrumental, manifesting more concern for the establishment of dominance, control of group activities, task orientation, and greater risk taking. Males are more concerned with the establishment and maintenance of social dominance. Females are more concerned a reciprocal and socially stable system of interpersonal relationships. Although males tend to organize their social groups into dominance hierarchies, male social groups tend to be more stable across situations and time than female social groups, which tend to splinter into status cliques based on various attributes (like popularity, beauty, athletics, and sociability). Females are more likely to use language as a socially binding process. Females compete by using language to disrupt the social relationships of their competitors (Geary 1998).

Male awareness is concerned with getting results, achieving goals, status, and power, beating the competition, and getting efficiently to the bottom line. Female awareness is focused on communication, cooperation, harmony, love, sharing, and interpersonal relationships (Pease and Pease 2000). Men value work. Women value relationships. Research in the 1990's showed that 70-80 percent of men reported work most important in their lives; 70-80 percent of women said their families were most important (Pease and Pease 2000).

Males substantially higher testosterone levels is associated both with their stronger interest in competitive sports and with their stronger interest in demanding careers (Navarro 2001). As noted previously, males tend to be more competitive than females (Rhoads 2004). Males are more competitive; females more cooperative (Maccoby 1998; Browne 2002).

In terms of valuing social relationships, females tend to value altruistic, reciprocal, and supportive relationships. Males tend to value power, politics, competition, and affirmation of their social status (Baron-Cohen 2003). Men seek to dominate other men through moving up in hierarchical groups. Women seek influence, but they place greater value on reciprocal relationships. Females value group-oriented and group-facilitating acts more than males. Female groups are more cohesive, but less structured and less hierarchal than men's groups (Browne 1995; Golombok and Fivush, 1994; Lips 2001; Rhoads 2004). In prison, women say they miss relationships and intimacy; men say they miss their lost power and sense of masculinity (Rasche 1991).

A study conducted in five Western countries asked men and women to describe the kind of person they would ideally like to be. Men chose adjectives such as bold, competitive, capable, dominant, assertive, admired, and practical. Women chose warm, loving, generous, sympathetic, attractive, friendly, and giving (Pease and Pease 2000).

These sexually dimorphic social differences have interesting implications for volunteer recruitment and retention. It is reasonable to expect that individuals would prefer to volunteer for and remain as volunteers for organizations in which they can be part of a social community they enjoy.

P13: Males prefer to volunteer in organizations that are goal and achievement oriented, emphasizing efficiency and practicality in meeting clearly-defined objectives.

P14: Females prefer to volunteer in organizations that are people oriented, emphasizing consensus, communication, and cooperation.

P15: Males prefer to volunteer in organizations with a clearly-defined hierarchy.

P16: Females prefer to volunteer in organizations that are less structured and less hierarchal than do men.

P17: Males prefer volunteer tasks that involve team competition.

P18: Females prefer volunteer tasks that emphasize group-orientation, group-facilitation, and reciprocal relationships.

P19: Males will remain longer in volunteer roles in which they feel dominant, and derive a sense of efficacy.

P20: Females will remain longer in volunteer roles in which they feel a sense of intimacy and belonging with others in the organization.

Sexual Dimorphism and Age

Female estrogen production increases during puberty, remains high during peak reproductive years, and then declines sharply after menopause. In males there are two types of testosterone: total and free (biologically active) testosterone, whose levels peak in late adolescence and decrease slowly thereafter, especially after the age of 50 (Cranton 1997). Due to a series of endocrine changes in aging men, free testosterone is especially reduced by an enzyme conversion of testosterone to estrogen known as aromatase. As men age, then, their total testosterone declines slowly, their estrogen levels rise, and their free testosterone levels decline even more. This condition is known as andropause. It is surprising to learn that the average 60-year-old male has more circulating estrogen in his bloodstream than the average 60-year-old female (Andropause 2007; Merck 2005).

Since hormonal differences between men and women narrow with age, and especially the reduction of testosterone and increase of estrogen in older men, it is reasonable to expect behavioral sex differences to narrow. Legato (2005) has observed that the communication differences between men and women narrow with age. Hyde (2005) conducted a meta-analytic study of sex difference studies and found that the magnitude of differences between males and females was less during childhood and increased in adolescence. Prepubescent girls and boys have similar testosterone levels until puberty, at which time girls testosterone levels double while boys' levels increase by a factor of 10 to 20 (Rhoads 2004).

P21: Behavioral differences between males and females increases with a rise in sex hormones and declines with a decrease in sex hormones.

Testosterone levels are correlated with confidence, aggression, and several of the typical male behaviors discussed previously. Therefore, as free testosterone levels decline and estrogen levels rise in males as they age, it is reasonable to expect a lessoning of these behaviors. For example, males become more empathetic, more cooperative, placing a greater importance on relationships and intimacy.

P22: Older males are more likely than younger males to volunteer in roles emphasizing helping and nurturing of others.

P23: Older males are more likely than younger males to volunteer for and remain it organizations in which relationships among volunteers are cooperative (not competitive), and reciprocal (not hierarchical).

P24: Older males are more likely than younger males to volunteer in roles helping children.

P25: Older males are less likely than younger males to volunteer in risky, potentially dangerous roles.

Sexual Dimorphism and Marriage

The magnitude of sex differences appears to be mediated through sex hormones (Kimura 2000). In the previous section, the effect of age on sex hormones was discussed. In the scientific literature, the influence of testosterone on aggression and violence has been studied. One study, which pertains to this work, examined the effect of marriage on male testosterone levels. Mazur and Booth (1998) conducted a 10 year longitudinal study of 2,100 men, finding that testosterone levels began to slowly decline after marriage as men made the transition from bachelor to husband, and remained low after men remained stably married. Among men who divorced, testosterone levels rose just before and after the separation. In a subsequent study of 58 Boston area men, the investigators examined the testosterone levels of single men, married men with children, and married men without children. Whether or not a man was a father was not a significant predictor of testosterone levels. However, single men had significantly higher testosterone levels than married men (Cromie 2002).

As discussed in the previous section, it is reasonable to expect sex differences to narrow with the narrowing of sex hormonal differences.

P26: Married males are more likely than single males to volunteer in roles emphasizing helping and nurturing of others.

P27: Married males are more likely than single males to volunteer for and remain it organizations in which relationships among volunteers are cooperative (not competitive), and reciprocal (not hierarchical).

P28: Married males are more likely than single males to volunteer in roles helping children.

P29: Married males are less likely than single males to volunteer in risky, potentially dangerous roles.

Conclusion

The intensive multidisciplinary interest in sex differences has produced a substantive body of work. The remarkable increase in the knowledge of sex differences has largely been overlooked in voluntary action research. This chapter has presented sex differences that (1) had the most scientific support through robust studies and replications, and (2)

had managerial implication for volunteer program managers. For voluntary action researchers, a number of testable propositions were offered to stimulate future investigations. Indeed, researchers in related areas such as fund raising, nonprofit marketing, social marketing, cause marketing, Internet marketing, health care marketing, and higher education marketing can adjust these propositions to their contexts for future research in their fields.

Researchers investigating implications of sex differences should always keep in mind that men and women are more alike than different. Sex differences are referring to average differences between males and females. For example, one average, men are taller than women. Obviously, some women are taller than some men, so if two normal distributions of height measures were placed side by side on a chart, the mean for males' height would be greater than the mean for females' height, but there would be overlaps on the leading and lagging tales of the distributions. However, in scientific inquiry, explaining variation in a phenomenon is the focus, and, as such, sex differences offer a rich opportunity to understand more about recruiting and retaining male and female volunteers in a variety of nonprofit organizations.

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