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Cover Design

The creation of the graphic for the logo came about by thinking of how ideas are formed and what the process would look like if we could see into our brains. The sphere represents the brain, and the grey matter inside consists of all the thoughts in various stages of development. And finally, the white spotlight is one idea that formed into a reality to voice. The entire logo is an example of creation in the earliest stages.

Cathy Solarana, Graphic Designer

Instructions for Contributors

The *Journal of Psychological Inquiry* encourages undergraduate students to submit manuscripts for consideration. Manuscripts may include empirical studies, literature reviews, and historical articles; manuscripts may cover any topical area in the psychological sciences. Write the manuscript for a reading audience versus a listening or viewing audience.

1. Manuscripts must have an undergraduate as the primary author. Manuscripts by graduates will be accepted if the work was completed as an undergraduate. Graduate students or faculty may be co-authors if their role was one of teacher or mentor versus full fledged collaborator.
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Children's Assignment of Sex to Familiar and Unfamiliar Animals

Meredith L. Hawthorn and Leslie M. Templeton

Hendrix College

In previous research, children have used a male default when identifying the sex of stuffed and pictured animals (e.g., Arthur & White, 1996). The male default is the tendency to assign the male sex to a character for which the sex is unknown. The present study investigated first-grade children's assignment of sex to animals by showing 6-year-old children black-and-white photographs of an unfamiliar and a familiar animal. We hypothesized that children would identify the unfamiliar animal as male more often than female. Children did not assign the male sex to the unfamiliar animal significantly more often overall than the female sex but did use a male default when the unfamiliar animal was presented before the familiar animal.

The current study examined children's sex labeling of familiar and unfamiliar animals. Between the ages of two and three years old, most children are able to identify themselves as girls or boys and are also able to identify the gender of others (Fagot & Leinbach, 1993). However, there is some evidence that when identifying the gender of another person is not possible, children and adults use the male default, which is the assignment of male gender to a character when the gender of the character is unknown. Previous research found that children and adults used masculine pronouns to describe stuffed and pictured animals (Arthur & White, 1996; Gelb, 1987; Lambdin, Greer, Jibotian, Wood, & Hamilton, 2003). Researchers refer to the tendency to assign the male pronoun to animals when the sex was unknown as "the animal = male hypothesis".

Previous research suggests that both male and female adults used a male default when referring to gender-unknown characters. Male and female college students used masculine pronouns when asked to generate a description about a person they would consider "typical" (Hamilton, 1991). An earlier study by Hamilton (1988) found that adults, who completed sentences with masculine generic pronouns (the use of "he" or "him" to refer to a person who could be a man or a woman), were more likely to visualize the person described in the sentence as a male individual than those who completed sentences with pronouns that were not gender biased (i.e., "he" or

"she" or "they"). Gastil (1990) found that when participants read sentences using the pronoun "he" in a generic sense, they were significantly more likely to think of the person referred to in the sentence as the male gender than as either female or male gender. One study found that male and female college students who read a story about a gender ambiguous person assigned the male gender to the character significantly more often than they assigned the female gender (Merritt & Kok, 1995). These findings support adults' use of the male default.

Research has also investigated the use of the male default when referring to the sex unknown animals. Lambdin et al. (2003) investigated children's and adults' assignment of sex to stuffed animals for which the sex was not specified. In the first study, individual children (3- to 10-years-old) and adults were shown a stuffed teddy bear and asked to tell the researcher their thoughts about the animal's characteristics and possible activities. Researchers found that all the children and adults used masculine rather than feminine pronouns in describing the teddy bear. In the second study, researchers replicated the procedure with male and female kindergarten children (5- to 6-years-old), using three stuffed animals that college students previously rated as possessing characteristically feminine attributes (cat, snail, & butterfly) and three gender-neutral animals (dog, mouse, & deer). Children referred to the gender-neutral animals and the snail and butterfly with male pronouns significantly more often than with female pronouns. Children were not more likely to believe the obviously female stuffed animals were the male than the female sex.

In a third study, Lambdin et al. (2003) investigated the impact adults' descriptions had on pronouns children used. Researchers showed 5- to 7-years-old children two sex-neutral stuffed animals and asked them to provide a story about each animal. A few days later, researchers instructed teachers to use female pronouns when talking to the children about one of those two animals. Later the children discussed the same animal. Children used more male than female pronouns when identifying the animals

Leslie Templeton from Hendrix College was faculty sponsor for this research project.

before hearing the adults' stories. After hearing stories containing female pronouns, children continued to use male pronouns to describe the animals. Thus researchers found overall support for the presence of an "animal = male" bias among children.

Gelb (1987) observed the frequency of children's exposure to adults using male pronouns in describing gender-ambiguous characters and investigated the implications of such usage. Gelb observed teachers and preschool-aged children (3- to 5-years-old) in their classrooms. He recorded the number of times teachers used masculine pronouns to refer to sex-neutral characters, mostly animals, in their everyday activities, such as reading books to children, singing songs, and identifying stuffed and live animals. Teachers used significantly more male than female or neutral pronouns to refer to animals whose sex was not evident, as well as to animals who were clearly the male sex. In a second study, children (3- to 5-years-old) were shown drawings of a human baby, a dinosaur, and a rabbit. There was no identification of the sex of each character, and children told stories about each drawing. Children referred to the characters with male pronouns significantly more often than female pronouns.

Arthur and White (1996) examined children's assignment of sex to animals in watercolor paintings. Participants were of three different age ranges; 4 to 5, 7 to 8, and 10 to 11 years old. Participant viewed 28 different paintings of bears displaying stereotypically male, stereotypically female, or neutral sexual behaviors. The children told a story about each picture. Four- to five-year-old boys and girls labeled the bears using their own sex. The 7- to 11-year-old girls were equally likely to use a male or female sex label for the bears, but 7- to 11-year-old boys more often used a male versus female sex label for the gender-neutral bears.

Most research has investigated children's use of "the animal = male hypothesis" using unrealistic depictions of familiar animals, such as stuffed animals, drawings of animals, and storybook pictures. The current study used actual photographs of animals as stimuli. There was also a manipulation of children's familiarity with the animal. The first hypothesis was that children would use the male default more when referring to an unfamiliar animal with which they had no experience. The second hypothesis was that children would be equally likely to use male and female labels for a familiar animal.

Method

Participants

Participants were 111 first-grade students ($M = 80.69$ months, $SD = 4.13$) from public elementary schools in Conway, Arkansas. School officials gave consent to conduct research in the schools. Parental consent was obtained via signed permission slips for first-grade children. There were individual observations of children at their schools. Data from three participants were excluded because those children failed to identify the familiar animal correctly. Thus, 108 children (58 girls and 50 boys) participated. There were 88 White participants, 17 Black participants, one Hispanic participant, and two "other race" participants.

Materials

Participants were shown a black-and-white photograph of a numbat, an animal that originates in Australia, and was presumed to be an unfamiliar animal to young children residing in Arkansas. Each participant was also shown a black-and-white photograph of a squirrel, an animal presumed familiar to children in Arkansas. Both animals had similar fur length, but the squirrel's tail was more full and upright than the numbat's tail. The animals were similar in body size and posture, but the numbat had a longer face and nose than the squirrel. The numbat was slightly larger and had a longer tail and larger ears. The photographs were carefully selected so that they were alike in the orientation and posture, the background setting of the animal, the actual size of the photograph, and the color (black and white). Figures 1 and 2 contains those photographs.

Procedure

There were individual interviews in the hallway outside the children's classrooms. The researcher asked the children if they would like to play a game and answer some questions. After providing verbal assent, each child was shown one photograph each of the unfamiliar and the familiar animal. The presentation of the photographs was counterbalanced to control for the order of presentation. Each child was asked two questions about each picture: "Do you know what this animal is?" and "Do you think this animal is a boy, is a girl, or could it be a boy or a girl?" Children indicated their responses by placing a token on one of three drawings; a drawing of a girl, a boy, or a boy and girl together. When children did not know the type of animal, they were told the name of the animal. Data from children who could not identify the squirrel



Figure 1. Unfamiliar animal - numbat.



Figure 2. Familiar animal - squirrel.

were excluded from analysis. None of the children could identify the numbat.

Results

Chi square tests for goodness of fit determined whether children were more likely to assign the male sex than the female sex to the unfamiliar animal as well as whether children were equally likely to assign the male and female sex to the familiar animal.

Table 1

Number of Children Assigning Each Sex to Unfamiliar and Familiar Animal

Animal	Assignment of Sex		
	Boy	Girl	Boy/Girl
Unfamiliar	46	28	34
Familiar	36	39	33

Assignment of Sex

Children did not assign the male sex to the unfamiliar animal ($N = 46$) significantly more often than the female sex ($N = 28$), $\chi^2(2, N = 108) = 4.67$, n.s. As predicted, children did assign the male ($N = 36$) and female sex ($N = 39$) equally often to the familiar animal, $\chi^2(2, N = 108) = .5$, n.s. Children also gave the “boy or girl” response about equally often to the two animals. Table 1 contains data for the number of children assigning male versus female sex to the numbat and squirrel.

Order of Photograph Presentation

Unfamiliar animal presented first. Children who saw the unfamiliar animal before the familiar animal were significantly more likely to assign the male sex ($N = 26$) or male/female sex ($N = 21$) than the female sex ($N = 10$) to the numbat, $\chi^2(2, N = 57) = 7.23$, $p = .027$. These children were also significantly more likely to assign the female sex ($N = 28$) than the male ($N = 14$) or male/female sex ($N = 15$) to the squirrel when the numbat was presented before the squirrel, $\chi^2(2, N = 57) = 6.42$, $p = .04$. The effect size of this analysis was $w = .48$, which is between a medium and large effect size.

Familiar animal presented first. Children who saw the familiar animal before the unfamiliar animal were not significantly more likely to assign the unfamiliar animal the male sex ($N = 20$) than the female sex ($N = 18$), $\chi^2(2, N = 51) = 1.53$, n.s.. They were also not significantly more likely to assign the familiar animal the male sex ($N = 22$) than the female sex ($N = 11$), $\chi^2(2, N = 51) = 3.65$, n.s., although the pattern of results suggested a trend toward labeling the first-seen familiar animal male

Table 2

Number of Children Assigning Each Sex to Familiar and Unfamiliar Animals in Both Orders of Presentation

Order of Presentation	Assignment of Sex		
	Boy	Girl	Boy/Girl
Unfamiliar/Familiar			
Unfamiliar seen first	26	10	21
Familiar seen second	14	28	15
Familiar/Unfamiliar			
Familiar seen first	22	11	18
Unfamiliar seen second	20	18	13

more often than female. Data for the number of children assigning the male versus female sex to each animal by order of presentation.

Discussion

The results supported the hypothesis that children would be equally likely to use the male or female sex label for a familiar animal, but the data only partially supported the hypothesis that children would rely on a male default with the unfamiliar animal. That the children's responses to the unfamiliar animal compared to the familiar animal suggested a trend toward to use the male sex label for the unfamiliar animal. When the unfamiliar animal was presented first, children were significantly more likely to label it male or male/female than female. This finding is similar to that of Lambdin et al. (2003) in which children were more likely to label a first-described animal as male versus female sex. Perhaps children rely on a male default with the unfamiliar animal, particularly when in the first part of a task they have not done before. The participants in the current study were also more likely, although not significantly more likely, to assign male sex versus the female sex to the first-seen familiar animal.

One explanation for children not assigning the male sex to unfamiliar animals more than to familiar animals could arise from the manipulation of the stimulus. A characteristic of one or both of the animals may have played a role in children's identification of the animal's sex. In particular, the current experiment used photographs, rather than drawings, of the animals. Perhaps male sex animals are more likely characters in books, but children know animals can be of either sex. That children know live versus fictional animals can be of either sex may be one explanation for the difference between the current study and findings from previous studies. The method for giving children response choices in this study was different from the open response method from previous experiments. This difference in methodology may have contributed to differences in findings between the present and previous studies.

Anecdotal evidence gathered from the children suggested that participants were basing their judgments about the animals on some criteria. Children provided interviewers with comments such as "It's hard to tell...yep, it's a boy" (in reference to the numbat photograph). Another child remarked that the numbat was a boy because "You're supposed to look at the belly...if it's fat, it's a girl." Another child remarked, in reference to the squirrel, "It's a girl because I think I see little eye-

lashes." Other participants inspected the photographs intently, as if to discover a clue to the animal's sex. These observations suggest that children may have stereotypical misconceptions about sex identification. This anecdotal evidence also supports the contention that children use physical clues (other than genitalia) to identify the sex of animals. Children used physical clues that were not actually present in the photographs. Children imagined that certain physical characteristics, which they consider typical of male or female humans, were present in the photographs. This observation suggests that children associated certain traits as either male- or female-related, even in non-human animals.

Children's comments alluded to physical characteristics (aside from genitalia) as indicating the male or female sex. Future studies could manipulate of some physical characteristics, such as body size (fat versus lean), eyelashes, or fur type and length, of the animals.

Another variation of the current study could ask children if they have ever seen the animal instead of asking them if they knew what the animal was. This procedure might help determine whether children have had experience with the animal rather than whether they actually know the name of the animal. Investigating whether children's possession of pets played a role in how children identify sex of other animals would be interesting. Perhaps children who have pets are more familiar with the concept of identifying an animal's sex.

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Effect of Tanning Method on the Social Perception of Women

Amanda Kreutner and Frank Ragozzine

Missouri State University

We presented college students with a tanned woman's picture accompanied by 1 of 5 written descriptions that differed in how the person obtained the tan. The tanning conditions were; unintentional outdoor, intentional outdoor, intentional indoor spray-on, intentional indoor tanning bed, and a control condition. Participants, 100 women and 100 men (M = 18.6 years old), rated the woman's attractiveness, healthiness, and vanity. We found significant main effects of both gender of the participant and tanning condition on ratings of vanity. Planned comparisons revealed a significant difference between the intentional conditions and unintentional condition on ratings of vanity, and between the indoor and outdoor conditions on ratings of vanity. Thus, the means for obtaining a tan influenced social perception of women.

During the summer months, outdoor exposure to the sun is a customary pursuit for many people. Indeed, intentional tanning behavior continues to occur despite the well-publicized link between tanning and skin cancer. Within the United States, estimates are that about 10,000 people died from skin cancer in the year 2003 (National Center for Chronic Disease Prevention and Health Promotion [NCCDPHP], 2003). The American Cancer Society states that tanning is a preventable risk factor for skin cancer (NCCDPHP), and there should be more effort to prevent people from actively engaging in tanning behavior.

To understand effective ways for discouraging people from tanning, we need to understand their motives for tanning. Historically, tanned skin first became an appealing trait during the period of the Industrial Revolution when a tan showed that someone was not forced to work indoors and had spare time to spend in the sun. In other words, there was a link between tanning and social status (Keesling & Friedman, 1987). Additionally, the public viewed tanned skin as healthy when observers determined that sun exposure alleviated various illnesses such as tuberculosis (Keesling & Friedman). In modern times, a consistent theme in people's decision to sunbathe intentionally is the belief that it increases their attractiveness (Beasley & Kittel, 1997; Greene & Brinn, 2003; Leary & Jones, 1993; Miller, Ashton, McHoskey, & Gimbel,

1990). There is some evidence to support this belief. For example, Broadstock, Borland, and Gason (1992) found that a suntan was a significant variable that positively influenced adolescents' views of attractiveness and healthiness. However, tanning can also have a negative impact on attractiveness over time, namely, wrinkled skin. Martin (2000) examined how participants perceived women with varying degrees of tanned-skin color (a positive effect of tanning on a person's appearance) and wrinkling (a negative effect of prolonged tanning on a person's appearance). Martin found that women rated tanned faces without wrinkles as significantly healthier than tanned faces with wrinkles. Though, oddly, Martin did not find this effect for the men in the study, and there was no interaction between tanning and wrinkling on ratings of attractiveness.

Because appearance is a major reason for acquiring a tan, appearance-based treatments should be effective at deterring tanning behavior (Hillhouse & Turrisi, 2002; Jones & Leary, 1994). Hillhouse and Turrisi administered female college students an appearance-based treatment, which consisted of a workbook that concentrated on such variables as the negative effects of tanning on the skin, as well as ways other than tanning to enhance appearance. Students in the treatment group intended to tan indoor significantly less than the control group, which did not receive the appearance-based treatment. More importantly, two months following the study, women in the treatment group claimed to have decreased their frequency of indoor tanning more than women in the control group and also reported that they tanned indoors less frequently than they had before the study. A direct comparison between health-focused and appearance-focused treatments (Jones & Leary) showed that the appearance-focused treatment was the most successful in increasing intent to develop healthier sun-related habits.

Intentionality is an additional variable considered in tanning behavior. Investigators view (a) tanning via intentional sunbathing and (b) tanning via the accidental lack of sun protection as two separate behaviors (Clarke, Williams, & Arthey, 1997; Geller et al., 2002; Greene &

Frank Ragozzine from Missouri State University was the faculty sponsor for this research project.

Brinn, 2003; Jackson & Aiken, 2000). Variables correlated with a person's intent to protect themselves from the sun include perceiving oneself as being more vulnerable to skin cancer (Jackson & Aiken; Jones, Harris, & Chrispin, 2000), having a greater confidence in a person's control over her or his health (Jackson & Aiken; Leary & Jones, 1993), being acquainted with a person with skin cancer (Jones et al.; Keesling & Friedman, 1987; Leary & Jones), being more informed about skin cancer (Keesling & Friedman), being influenced by friends and community norms to protect oneself from the sun (Geller et al.; Jackson & Aiken) being a woman (Geller et al.; Jones et al.; Keesling & Friedman; Leary & Jones), and having a skin type that is fair or that burns without tanning (Clarke et al.; Geller et al.; Leary & Jones).

In comparison, important variables positively correlated with intentional sun tanning behaviors include being concerned with appearing physically attractive to others, along with believing that a tan enhances a person's appearance (Leary & Jones, 1993). Researchers have also found higher levels of intentional tanning correlated with having naturally darker or olive-colored skin that readily tans without burning (Clarke et al., 1997; Cokkinides, O'Connell, Thun, & Weinstock, 2002; Geller et al., 2002; Miller et al., 1990), being influenced by friends and community norms that promote having a suntan (Geller et al.; Jackson & Aiken, 2000; Keesling & Friedman, 1987), being a woman (Cokkinides et al.; Geller et al.; Keesling & Friedman), perceiving oneself as less vulnerable to skin cancer (Jackson & Aiken; Miller et al.), and having a tendency to engage in risky behavior (Keesling & Friedman). Interestingly, being a woman is a characteristic positively correlated with both protecting oneself from the sun and sunbathing. Though contradictory, this finding reflects a double standard for tanning within society, in which advertisers employ beautiful, tanned models, suggesting that a tan is a desirable trait, while promoting the sale of sun-protective make-up and skin products (Keesling & Friedman). The use of sunscreen could also give women a false sense of security, leading them to spend too much time in the sun (Geller et al.).

Additionally, the American Academy of Dermatology (as cited in Greene & Brinn, 2003) found that intentional indoor tanning is on the rise. The incidence of indoor tanning increased from 2% of the American population in 1986 to 12% in 1996. Young adult women spend more time tanning indoors than do

older women, children, or men (Cokkinides et al., 2002; Geller et al., 2002; Robinson, Rigel, & Amonette, 1997). Reasons for using indoor tanning facilities, specifically, include convenience, the chance to unwind and socialize, and enhancement of physical attractiveness (Beasley & Kittel, 1997). Another reason is the false belief (NCCD-PHP, 2003) that the use of tanning beds, versus sun exposure, is a healthier way to tan (Beasley & Kittel). One article ("Indoor Tanning: Unexpected Dangers," 2005) indicated that a substantial number of tanning salons falsely minimize the health risks of indoor tanning.

As mentioned earlier, one variable correlated with intentional tanning is the belief that a person is less prone to develop skin cancer than people who do not intentionally tan (Jackson & Aiken, 2000). This belief is called the optimistic bias (Helweg-Larsen & Shepperd, 2001), in which people perceive their personal risk of facing negative consequences as less than that of other people. For example, Clarke et al. (1997) found that participants perceived other people's risk of acquiring skin cancer as greater than their own. Participants also judged that other people with skin cancer would have a shorter lifespan than they themselves would if they had skin cancer. When Miller et al. (1990) looked at the optimistic bias in three different groups of participants divided by tan level (low, medium, and high), they found evidence in all groups for an optimistic bias when participants assessed their risk of acquiring skin cancer, premature wrinkling, and dried skin. However, the optimistic bias displayed by the participants with the high-tan level was significantly less than in the other two groups. These high-tan level participants recognized many of the health risks associated with tanning, yet held the belief that the advantages gained from sun tanning outweighed the negative effects (Miller et al.). One inference is that many people value tanning's immediate benefits for appearance versus tanning's future detrimental effects on health (Greene & Brinn, 2003; Miller et al.).

Because attractiveness is a primary reason for obtaining a tan, we want to know whether other variables related to tanning, besides the tan itself, affect perceived attractiveness. Additionally, how does tanning behavior affect perceptions of personality characteristics such as vanity? Such knowledge could lead to more effective treatments for reducing tanning behavior. Miller et al. (1990) conducted a study to determine whether perceived attractiveness was affected by the intentionality of obtaining a tan. Participants read one of three descriptions of a person and rated him or her on multiple per-

ceived characteristics. The descriptions were (a) no mention of a tan (no tan condition), (b) a mention of a dark tan because of outside activities (unintentional tan condition), and (c) a mention of a dark tan because of continual sunbathing (intentional tan condition). Miller et al. found that participants rated the person described in the unintentional tan condition as significantly more attractive than either person described in the intentional or no tan conditions. The person described in the intentional tan condition was also rated significantly more attractive than the person described in the no tan condition. Additionally, ratings for vanity were significantly higher in the intentional tan condition than in either the unintentional tan or no tan conditions. Though not significantly different, ratings for vanity were higher in the unintentional tan than in the no tan condition. These results coincide with findings that attractiveness is associated with such negative characteristics as vanity and conceitedness (Bassili, 1981; Dermer & Thiel, 1975), despite the “beautiful is good” phenomenon (Synnott, 1988, p. 611).

The purpose of the present study was to investigate the effect of different tanning methods on social perceptions of young women. Research findings indicate that tans can increase perceived attractiveness (Miller et al., 1990; Broadstock et al., 1992) and healthiness (Broadstock et al.), but tans can also affect perceived vanity (Miller et al.). In the present study, we extended research by Miller et al. and asked participants to rate the attractiveness, healthiness, and vanity of a tanned woman. The Miller et al. study only used written descriptions, although the authors suggested presenting an accompanying picture with written descriptions. Therefore, we presented a photo of a tanned young woman along with the written descriptions. Additionally, Miller et al. used only three tanning conditions; control, intentional tan, and unintentional tan. In the present study, we included additional conditions that varied in terms of intentionality and whether the tan was obtained indoors or outdoors.

Specifically, along with the photo of the tanned woman, we provided one of five written descriptions that led to the following conditions; (a) a control condition with no mention made of the tan, (b) an unintentional outdoor tan condition, (c) an intentional outdoor tan condition, (d) an intentional indoor tanning bed condition, and (e) an intentional indoor spray-on tan condition, which is not known to carry any health risks. We expected to find that tanning condition would have an effect on ratings of attractiveness, healthiness, and vanity.

We also included male and female participants. We wished to assess whether gender had an influence on

these ratings, and whether there was an interaction between tanning condition and gender. Based upon previous evidence, we expected to find that the intentional tans would lead to lower ratings of attractiveness and healthiness than would unintentional tans, but that intentional tans would lead to higher vanity ratings than would unintentional tans. Thus, we expected that ratings of attractiveness and healthiness would be positively correlated with each other but would be negatively correlated with ratings of vanity. Another expectation was that ratings of healthiness would be higher if the tan was spray-on versus intentional sun tanning or salon tanning. Finally, we examined whether tanning indoors versus outdoors would lead to different ratings of attractiveness, healthiness, and vanity.

Method

Participants

Two hundred and eleven students at Missouri State University participated. However, the population of interest in the study was young heterosexual adults. Therefore, participants with a homosexual or bisexual orientation, over the age of 25 years, or who had seen the woman in the photograph in real life had their data discarded and not included in any analyses. We excluded data from four participants because of their sexual orientation, from six participants because of age, and from one participant because of recognition of the pictured woman. Of the remaining 200 participants, there were 100 women and 100 men with an age range of 18 to 24 years ($M = 18.6$). Participants earned course credit in their introductory psychology courses for participation.

Materials

Stimuli consisted of a picture and written description of four different young women; all names and descriptions were fictitious. Each picture and description was always presented to participants in the same order. The pictures and descriptions of the first, third, and fourth women (Beth, Sara, and Mary, respectively) were the same in all five conditions. These pictures and descriptions were used only as fillers to prevent participants from realizing that the topic of interest in the experiment was tanning, which could have been communicated to future participants between testing sessions. Data collected regarding these three individuals were not analyzed.

The picture of the second woman (Heather) was the same in each condition, and it depicted a young woman with an obviously tanned face. Table 1 contains the

description of Heather that varied in each of the five conditions; control, unintentional outdoor tan, intentional outdoor tan, intentional indoor spray-on tan, and intentional indoor tanning bed tan.

Participants rated each of the four women, using 7-point Likert scales, for the characteristics of attractiveness, healthiness, and vanity. The scales ranged from 1 (*extremely unattractive*) to 7 (*extremely attractive*), 1 (*extremely unhealthy*) to 7 (*extremely healthy*), and 1 (*extremely modest*) to 7 (*extremely vain*).

Procedure

An equal number of men and women were randomly assigned to one of the five conditions. Testing occurred during one experimental session lasting approximately 15 min with a maximum of three participants in each session. Participants were instructed to sit one seat apart and not to converse. After obtaining informed consent and an e-mail address for the purpose of debriefing, participants were given a demographic information form that assessed their age, gender, and sexual orientation. Upon completion, this form was collected and the first picture and description (Beth), along with the rating form, was given to participants. As participants finished rating each woman, they notified the experimenter by raising their hands. Participants were then given the next picture and description, along with another rating form. The previous picture and description and rating forms were removed. This removal limited comparisons among the four photos. Additionally, participants were instructed to rate the women independently of each other.

After participants finished rating all women, all four pictures were given to them, along with a form asking if they knew or had ever seen any of the women in real life. If they had, participants were asked to indicate which one. To prevent communication about the purpose of the experiment before all participants were tested, debriefing occurred in the form of e-mails sent to participants after all data had been collected.

Results

For the initial analyses, three separate 2 (gender) x 5 (tanning condition) between-subjects ANOVAs were used to analyze the effect of the tanning condition on ratings of attractiveness, healthiness, and vanity. An alpha level of .05 was used for these and all subsequent analyses. No significant main effects were found for the tanning condition on ratings of attractiveness, $F(4, 190) = .62, p = .651$, or healthiness, $F(4, 190) = 1.90, p = .113$. However, there was a significant main effect of tanning

Table 1

Description of Heather in Each of the Five Conditions

<u>Condition</u>	<u>Description</u>
Control	Heather is a 22-year-old who is about to graduate with a B.S. in international business. She is currently working at a clothing store and enjoys traveling and reading. She also plays tennis and rollerblades. She is 5'3" and weighs 116 pounds.

Unintentional Outdoor Tan

Heather is a 22-year-old who is about to graduate with a B.S. in international business. She is currently working at a clothing store and enjoys traveling and reading. She also plays tennis and Due to her participation in such outdoor activities, Heather has a dark tan. She is 5'3" and weighs 116 pounds.

Intentional Indoor Spray-on Tan

Heather is a 22-year-old who is about to graduate with a B.S. in international business. She is currently working at a clothing store and enjoys traveling and reading. She also plays tennis and rollerblades. Heather's favorite cosmetic product is a spray-on lotion that gives her a fake, dark tan. She is 5'3" and weighs 116 pounds.

Intentional Outdoor Tan

Heather is a 22-year-old who is about to graduate with a B.S. in international business. She is currently working at a clothing store and enjoys traveling and reading. She also plays tennis and rollerblades. Heather likes to sunbathe outside and has a dark tan. She is 5'3" and weighs 116 pounds.

Intentional Indoor Tanning Bed Tan

Heather is a 22-year-old who is about to graduate with a B.S. in international business. She is currently working at a clothing store and enjoys traveling and reading. She also plays tennis and rollerblades. Heather likes to go to tanning salons and has a dark tan. She is 5'3" and weighs 116 pounds.

condition on ratings of vanity, $F(4, 190) = 6.11, p < .001$. This effect was at a moderate level: ($\eta^2 = .107$). A Fisher's LSD post-hoc test revealed that the pictured woman (Heather) was rated as significantly more vain when she was described as having an intentional indoor spray-on tan ($M = 4.90, SD = .93$) than in each of the other four conditions ($p < .01$ for all comparisons); intentional indoor tanning bed ($M = 4.20, SD = 1.29$), intentional outdoor tan ($M = 4.08, SD = 1.05$), unintentional outdoor tan ($M = 3.98, SD = 1.03$), and the control ($M = 3.88, SD = .99$) conditions. The Fisher's LSD did not reveal any other significant differences between conditions on ratings of vanity (in all cases, $p > .05$).

We found a significant main effect of participants' gender on ratings of vanity, $F(1, 190) = 5.66, p = .018$. Female participants rated the pictured woman as being significantly more vain ($M = 4.38, SD = 1.03$) than male participants ($M = 4.03, SD = 1.17$). This effect was small ($\eta^2 = .025$). No significant main effect was found for the gender of the participants on either ratings of attractiveness, $F(1, 190) = .08, p = .780$ or healthiness, $F(1, 190) = .06, p = .803$. Furthermore, we found no significant interaction between the gender of the participants and the tanning condition on ratings of attractiveness, $F(4, 190) = .49, p = .740$; healthiness, $F(4, 190) = .51, p = .727$; or vanity, $F(4, 190) = 1.91, p = .111$.

To test our hypotheses regarding the intentionality of the acquisition of the tan on ratings of attractiveness, healthiness, and vanity, we conducted planned comparisons. All subsequent analyses used two-tailed tests. We compared the intentional conditions (intentional outdoor, intentional indoor spray-on, and intentional indoor tanning bed conditions) to the unintentional outdoor tan condition. We failed to find a significant effect of intentionality on the attractiveness ratings, $t(195) = -.59, p = .555$ or on the healthiness ratings, $t(195) = 1.95, p = .053$. We found a significant effect of intentionality on vanity ratings, $t(195) = -2.15, p = .033$ in which participants rated the woman significantly more vain in the intentional tanning conditions ($M = 4.39, SD = 1.15$) than in the unintentional tanning condition ($M = 3.98, SD = 1.03$). We conducted additional planned comparisons to determine whether ratings of healthiness were higher for the intentional indoor spray-on tan condition than for the intentional sun tanning and intentional indoor tanning bed conditions. We found no significant difference, $t(195) = 1.38, p = .170$.

Correlation coefficients were computed to assess the relationship among the attractiveness, healthiness, and vanity ratings. We found a small but significant positive

correlation between ratings of attractiveness and healthiness, $r(198) = .27, p < .01$. There was also a small but significant negative correlation between ratings of healthiness and vanity, $r(198) = -.17, p < .05$. We did not find a significant correlation between ratings of attractiveness and vanity.

We performed a series of planned comparisons for the outdoor tanning conditions (unintentional outdoor and intentional outdoor) versus the indoor tanning conditions (intentional indoor spray-on and intentional indoor tanning bed) on the ratings of attractiveness, healthiness, and vanity. We did not find any significant difference between the indoor and outdoor tanning conditions on either the attractiveness ratings, $t(195) = .39, p = .694$, or the healthiness ratings, $t(195) = 1.12, p = .262$. However, there was a significant effect on the vanity ratings, $t(195) = -3.13, p = .002$; participants rated the pictured woman as significantly more vain when she was described in the indoor tanning conditions ($M = 4.55, SD = 1.17$) than when she was described in the outdoor tanning conditions ($M = 4.03, SD = 1.03$).

Discussion

As we predicted, there was a significant effect of tanning condition on ratings of vanity; participants rated the woman in the intentional indoor spray-on tan condition significantly more vain than the woman in the other conditions. Unexpectedly, we failed to find an effect of tanning condition on ratings of attractiveness or healthiness. We also failed to find an effect of participant gender on ratings of attractiveness or healthiness. However, female participants did rate the pictured woman as significantly more vain than male participants, revealing a higher level of criticism for a more personality-based characteristic (vs. attractiveness or healthiness). We suggest that this effect of participant gender on perception of vanity should be investigated further, using a sample that encompasses a wider age range. An extension of this study would include investigating whether similar results would be obtained using pictures and descriptions of tanned men or whether gender of the participant has an effect on perceptions of other personality-based characteristics.

There was partial support for hypotheses that the more intentional the acquisition of the tan, the more (a) perceived attractiveness and healthiness of the pictured woman would decrease, but (b) the more perceived vanity would increase. Planned comparisons revealed that ratings of healthiness of the pictured woman were not significantly lower in the intentional tan conditions (out-

door, spray-on, and tanning bed) than in the unintentional tan condition. We also failed to find higher healthiness ratings for the intentional indoor spray-on tan condition compared to the other intentional conditions (intentional outdoor and intentional indoor tanning bed conditions). Additionally, we failed to find significant differences in attractiveness ratings between intentional and unintentional tanning conditions. But, consistent with our hypothesis, we did find that participants rated the pictured woman as significantly more vain in the intentional tan conditions than she was in the unintentional tan condition.

We also found a significant positive correlation between ratings of attractiveness and healthiness and a significant negative correlation between ratings of healthiness and vanity, but failed to find a significant relationship between ratings of attractiveness and vanity. Congruent with our results, previous researchers usually found that perceptions of attractiveness and healthiness coincided (Beasley & Kittel, 1997; Broadstock et al., 1992), though this was not always the case (Martin, 2000).

Our findings regarding intentionality were not entirely consistent with previous findings. Even though we used a greater range and variety of tanning conditions than Miller et al. (1990), we did not find significantly higher ratings of vanity in the intentional outdoor tanning condition than ratings for vanity in either the control or unintentional outdoor tanning conditions, as Miller et al. found. The significant difference in vanity ratings between the intentional indoor spray-on tan condition and each of the other four conditions could be because of the purely cosmetic nature of the intentional indoor spray-on tan, whereas the other means for obtaining a tan are more natural and could be associated with additional noncosmetic motives (Beasley & Kittel, 1997), such as outdoor activity and the opportunity to socialize or relax. However, this conclusion is only speculative because we did not assess participants' reasons for their ratings. Note, we used the word "fake" as part of the description of the woman's tan in the intentional indoor spray-on tan condition to facilitate participants' understanding that the spray-on lotion created a cosmetic tan rather than acting as a tan accelerator. Possibly the word "fake" affected ratings of vanity.

Finally, there were significant differences in ratings of vanity for the indoor (intentional indoor tanning bed and intentional indoor spray-on) versus the outdoor tanning conditions (intentional outdoor and unintentional outdoor tans). Specifically, participants rated the pictured

woman as significantly more vain when she was described in the indoor tanning conditions than when she was described in the outdoor tanning conditions. We attributed this result to the intentionality of both indoor tanning conditions, whereas only one of the outdoor tanning conditions was intentional. We also failed to find significant differences between indoor and outdoor tanning conditions on ratings of healthiness or attractiveness.

Leary & Jones (1993) suggested that altering current social perceptions of tanning may be more effective in preventing sunbathing behaviors than appearance-based treatments. Showing that intentional sunbathing is less attractive in peer groups might have been the first step toward this endeavor. Unfortunately, the findings in the present experiment do not support such an approach. Moreover, we conducted this study during the autumn season. Future research should examine if seasonal changes affect perceptions of attractiveness, healthiness, and vanity based on the tanning method. Examination of whether participants' knowledge of tanning risks affect these perceptions would be interesting. Lastly, this study used the same pictured woman with the same dark tan. An interaction might exist between the shade of a tan and the degree to which it was intentionally obtained, as Miller et al. (1990) suggested. Future studies should also investigate this possibility.

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Comparison of Attitudes Toward Smoking Between American and French University Students

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Previous research suggests that attitudes toward smoking may be a reliable predictor of smoking behavior and that culture can play a role in the strength and direction of attitudes. This study examined attitudes toward smoking among university students in France and the United States. Three hundred and one participants completed a questionnaire measuring attitudes toward smoking. In general, French participants displayed more favorable attitudes toward smoking than American participants. Smokers in the two countries did not differ significantly in their general attitudes toward smoking, but nonsmokers in France reported more positive attitudes toward smoking than American nonsmokers. These results suggest that cultural context can shape smoking attitudes and that antismoking advocates should target efforts to change smoking behavior to specific groups.

According to the World Health Organization (WHO, 2002), smoking is the single largest preventable behavior leading to disease and premature death. Smoking is one of the major variables in heart disease, stroke, and chronic lung disease. There are approximately 1.2 billion smokers worldwide, and about half will eventually die from smoking. Diseases related to smoking kill 1 in 10 adults globally, causing 4 million deaths annually. Considering these alarming facts about tobacco use and hoping to identify variables leading to smoking, I designed this study to measure potential cultural variations in attitudes toward smoking, focusing on American and French university students.

Attitudes and Smoking

Many health promotion campaigns have attempted to change attitudes toward cigarette smoking. However, some studies have shown that attitudes are not important variables in predicting behavior (LaPiere, 1934; Pederson, Koval, McGrady, & Tyas, 1998; Wickler, 1969), and some studies do not indicate a correlation between beliefs, opinions or knowledge, and behavioral variables (McNeill et al., 1988; Virgili, Owen, & Severson, 1991). On the other hand, numerous studies have supported the notion that attitudes are relatively reliable predictors of behavior (Ajzen & Fishbein, 1970; Kraus, 1995; Prislis & Ouellette, 1996). The theory of reasoned action, devel-

oped by Ajzen and Fishbein (1970), is one of the most useful health models and has served as a theoretical base for many smoking studies (Dratt, 1986; Gilmore et al., 2002; Marin, Marin, Perez-Stable, Otero-Sabogal, 1990; Morgan & Gurbe, 1994; Southworth, 2000). According to this model, attitudes are important contributors to the formation of intentions, which then lead people to behave the way they do. In addition, some studies indicate that attitudinal variables have a significant impact on initiating and maintaining smoking behavior (Sarafino, 2002). Research has shown that people who smoke tend to have more favorable attitudes toward smoking (Baer, 1966; Steptoe et al., 2002; Steptoe et al., 1995).

The effectiveness of attitudes in predicting behavior cannot, however, be fully understood without examining the context in which attitudes develop. Social learning theory (Bandura, 1971) places particular emphasis on the environment in the acquisition of attitudes. According to this theory, external variables such as a person's peer group or societal norms are involved in the acquisition of attitudes. As a consequence, this theory suggests that a person's culture is of great importance in understanding the relationship between attitudes and smoking behavior. Some researchers have carried out cross-cultural studies in an attempt to measure attitudinal differences between countries (Pelzer, Tsuda, & Vinck, 2002; Steptoe et al., 2002; Steptoe et al., 1995; Torabi, Yang, & Li, 2002). However, most of these studies have used the terms "belief" and "attitude" interchangeably, resulting in less attitude-specific findings. Some studies have also explored the specific impact of culture on smoking attitudes and behaviors (Bush, White, Kai, Rankin, & Bhopal, 2003; Parry, Thomson, & Fowkes, 2002), finding that cultural variables such as religion and tradition strongly influenced smoking attitudes. These researchers concluded that social context plays a crucial role in initiating and shaping smoking behavior. In addition, many researchers and health psychologists acknowledge the need for international comparisons of cigarette smoking and associated attitudes (Sarafino, 2002; Steptoe et al., 1995).

Ken Keith from the University of San Diego was the faculty sponsor for this research project.

People in the United States and France have significantly reduced their consumption of cigarettes since the 1960s (Center for Disease Control and Prevention [CDC], 2004; Forey, Hamling, Lue, & Wald, 2002), as compared to developing countries where there is a large increase in cigarette sales (Steptoe et al., 2002). Nevertheless, these two developed countries maintain a high prevalence of smoking, especially among younger people.

Smoking in France

Recent statistics indicate that 34.5% of the French population smokes, and an estimated half of the smokers are younger than 25 years of age (Gremy, 2002). The highest percentage of smokers are from 20 to 34 years old, and smoking-related deaths account for one-ninth of the national total (Institut National de Prevention et d'Education pour la Sante [INPES], 2004), or 60,000 deaths annually. Unlike in less developed countries, the percentage of French male and female smokers, 47% to 46% respectively, is about the same in the young adult population. France initiated a law banning public advertisements of tobacco-related products in 1992 and has recorded a five percent decrease in cigarette consumption since then. However, despite a recent 25% increase in the cigarette tax, the prevalence of smoking remains high (INPES).

A study of improvements in health behaviors across two years in the United States, Great Britain, and France found that the French were the most reluctant to improve their health (Retchin, Wells, Valleron, & Albrecht, 1992). Regarding tobacco use, "smoking in France seems a socially and culturally acceptable behavior" (Bittoun, 1985, p. 407), and many young people think smoking is a natural social behavior. Guibert (1999) found that a large portion of French people have a positive attitude toward smoking, and the more positive the attitude, the higher the correlation with smoking behavior. In addition, a recent national French report on tobacco use

(INPES, 2004) indicates that only 57% of young smokers wish to stop smoking. Further, only 51% of adult smokers considered increased taxes on cigarettes justified. These studies indicate that, overall, many French people tend to have a positive attitude toward smoking and that this propensity arises from sociocultural variables.

Smoking in the United States

Cigarette smoking in the United States reached its greatest popularity in the 1960s and, because of major

health reforms, reports, and new laws regarding tobacco smoking), levels have sharply declined. Smokers now constitute 23.6% of the population, and young adults from 18 to 29 years of age are the leaders in prevalence with an overall level of 30% (CDC, 2004). However, there is significant variation among states (Shopland, Niemcryk, & Marconi, 1992). California, for example, is not representative of national levels, with only 17.9% of young adults currently smoking (CDC). On the national level, a college health risk behavior survey (Torabi, Yang, & Li, 2002) indicated that nearly 75% of college students have tried smoking cigarettes. The survey also indicated tobacco use was higher among men, older students, and students at 2-year institutions.

Blendon (1998) reported that Americans have changed their attitudes about smoking since the 1980s. Most Americans now support increased regulations and taxation on tobacco products. However, Biasco and Harnett (2002) found that college students viewed smoking as a bad habit but did not want more restrictions controlling smoking because of their preference for freedom over laws. Biasco and Harnett also found that students agreed smoking is unattractive and reported that they would prefer a nonsmoking spouse or partner.

I decided to survey university students because they are a group that is relatively easy to access and because their similar educational background reduces potential variability across the comparison groups. Moreover, studying the young adult population is important because they are still in the process of enculturation, while also being in transition between adolescence and adulthood when "unhealthy behaviors may be malleable or consolidated into life time patterns" (Torabi et al., 2002, p. 248). According to Wechsler, Rigotti, Gledhill-Hoyt, and Lee (1998), over 25% of students begin smoking after starting college, suggesting that preventive actions should be undertaken in this part of the population.

The purpose of the present study was to examine differences between American and French university students' attitudes toward tobacco use. Despite the alarming magnitude of the damage caused by cigarette smoking worldwide, only a few researchers have carried out cross-cultural studies aimed at comparing smoking attitudes (Pelzer et al., 2002; Steptoe et al., 2002; Steptoe et al., 1995; Torabi et al., 2002), suggesting a need for additional information on the influence of social context in the development and maintenance of smoking in the young adult population (Sarafino, 2002; Steptoe et al., 1995). By identifying similarities and differences between French and American university students in their attitudes toward

smoking, the present study attempted to build on previous findings concerning the relationship between smoking attitudes and smoking behavior and to obtain better insight into the effect of culture on smoking. I chose France as a country of comparison for practical reasons and because this country has a significant incidence of smoking, especially among its younger population. Based on previous findings, I hypothesized that smokers would be more numerous in the French sample and would have more positive attitudes toward smoking than non-smokers. Similarly, I hypothesized that French participants would have more favorable attitudes toward smoking than their American counterparts.

Method

Participants

Participants were 217 American student volunteers (64 men and 153 women) enrolled at the University of San Diego (USD) and 84 French student volunteers (47 men and 37 women) enrolled at La Faculte de Droit de Montpellier and a communication school in Paris. For the purpose of this study, the researcher restricted the sample to participants with the following characteristics: (a) college students; (b) aged 18-25 years; and (c) belonging to either the French or the American culture. Women at USD constituted 71% of U.S. participants, whereas 44% of French participants were women. The average age for participants from the United States was 19 years and from France was 21 years.

Materials

The researcher modified previously used smoking questionnaires (Baer, 1966; Steptoe et al., 1995) and included some additional questions to produce a 25-item questionnaire (see Table 1). The questionnaire asked participants to indicate the extent of their agreement or disagreement with a series of attitudinal questions on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). A higher score indicated more positive attitudes toward smoking; reverse scoring was necessary for some items.

Following procedures of back-translation described by Matsumoto and Juang (2004), the researcher translated the English version of the questionnaire into French, asked two bilingual individuals to translate the questionnaire independently back into English, and then compared their translations to the original version and made appropriate corrections to arrive at a final version of the French questionnaire. The American participants completed the English version; the French participants completed the French version.

Table 1

Smoking Attitudes Questionnaire

- 1: Smoking should be banned in public settings
- 2: My country or state puts too much regulation on smoking
- 3: Sales of cigarettes should be outlawed
- 4: People under eighteen years of age should be allowed to purchase cigarettes
- 5: Bigger or more visible health warning signs should be put on cigarette boxes
- 6: Smoking is part of my culture
- 7: Smoking among French people is more acceptable because of their culture
- 8: Smoking is a disgusting habit
- 9: Smoking is a purposeless activity
- 10: Smoking helps one to be accepted
- 11: Smoking is a cool activity.
- 12: Smoking allows a sense of security
- 13: Everyone should try smoking once in his life
- 14: Smoking allows one self-expression.
- 15: One who smokes is insecure.
- 16: Smoking is one of man's worst innovations
- 17: It's okay to smoke if you don't get into the habit
- 18: Smoking is a vulgar habit
- 19: Smoking is a waste of time
- 20: Smoking while drinking alcohol is more acceptable
- 21: Smoking makes one look intellectual
- 22: Smoking makes one look tough
- 23: Smoking is more acceptable among males
- 24: Smoking is a sign of independence for females.
- 25: Smoking makes one look grown up.

Procedure

In both countries, the researcher recruited convenience samples of student volunteers. The Americans were primarily introductory psychology students who completed a consent form and the questionnaire in a psychology laboratory. In France, student volunteers took the consent form and questionnaire at the end of a class period and returned them at the next class meeting.

Results

Table 2 contains the percentages of smokers and non-smokers by sex and nationality. Overall, smokers constituted 27.2% of the participants. The percentage of smokers in the American and French samples was 18.4%, and

Table 2

Percentage of Smokers and Non-Smokers by Nationality and Sex

	Overall	American	French	Men	Women	American Men	American Women	French Men	French Women
Smokers	27.2	18.4	49.7	35.1	22.6	20.3	17.6	55.3	43.2
Non Smokers	72.8	81.6	50.3	64.9	77.4	79.7	82.4	44.7	56.8

49.7%, respectively. The researcher conducted a series of 2 (nation) x 2 (smoking/nonsmoking) x 2 (sex) analyses of variance and independent-samples *t*-tests to evaluate the differences between groups on the various questionnaire items.

Because several statements measured nonspecific attitudes toward smoking, the researcher combined 15 out of the 25 attitudinal items on the questionnaire into one variable reflecting general attitudes toward smoking. For this variable, statistical analyses revealed that French participants, overall, had significantly more favorable attitudes toward smoking than their

American counterparts ($M = 2.70$ vs. $M = 2.24$), $F(1, 293) = 3.81, p = .05$. Overall, male participants ($M = 2.63$) also showed a more favorable attitude than female participants ($M = 2.21$), $F(1, 293) = 14.84, p < .001$. Both American ($M = 2.42$) and French ($M = 2.90$) men had significantly more favorable attitudes toward smoking than American ($M = 2.16$) and French ($M = 2.44$) women: American $t(215) = 2.99, p < .003$; French $t(82) = 3.71, p < .001$. Not surprisingly, smokers ($M = 2.96$) had significantly more positive attitudes toward smoking than nonsmokers ($M = 2.14$), $F(1, 293) = 87.30, p < .001$. This finding was repeated for both the American group, $t(215) = 9.86, p < .001$ and the French group, $t(82) = 4.89, p < .001$.

There was no significant difference between American ($M = 2.94$) and French smokers ($M = 2.98$). On the other hand, French nonsmokers ($M = 2.41$) had significantly more favorable attitudes toward smoking than American nonsmokers ($M = 2.07$), $t(217) = 3.66, p < .001$.

Discussion

Prevalence levels for smoking behavior found in this study are consistent with international statistics. California's percentage of reported smokers is 17.9%

overall (CDC, 2004) and 18.4% for this study, and the percentage of observed French smokers (49.7%) is close to French levels (46.5%) for this age range (INPES, 2004).

The results of this study indicated the percentage of smokers in the French sample was higher and that young French adults held more favorable general attitudes toward smoking than did Americans, thereby supporting the researcher's hypotheses. Smokers had significantly more favorable attitudes than nonsmokers toward smoking, which is consistent with previous findings (Baer, 1966; Steptoe et al., 2002; Steptoe et al., 1995) and with the theory of reasoned action (Ajzen & Fishbein, 1970). In fact, this relation was found in both cultural groups, perhaps indicating that culture does not significantly influence the difference between attitudes of smokers and nonsmokers. Thus, in general, French and American smokers did not differ in their attitudes toward smoking. This finding suggests that smokers have a more favorable attitude toward smoking than nonsmokers regardless of their cultural context.

Cultural influences appear to play a role for nonsmokers; for example, French participants who did not smoke reported less negative attitudes toward smoking than American nonsmokers. This finding is important and suggests that smoking is a more socially and culturally accepted behavior in France than in the United States. This finding is also consistent with social learning theory (Bandura, 1971) and may be relevant to health promotion campaigns, perhaps indicating that a change in attitude in the nonsmoking population should be more emphasized in some cultures than others. This finding also suggests that American actions directed toward changing smoking attitudes have been successful and French health authorities may benefit from employing similar prevention measures, such as showing television ads and prohibiting smoking in public places. Furthermore, these results suggest the potential for similar techniques to change smoking atti-

tudes of smokers in both cultures. The fact that men had a more positive attitude toward smoking overall suggests that more actions should be directed toward changing smoking attitudes in the male population.

This study was limited in several ways. This researcher collected data from a convenience sample of volunteers in which the proportions of men and women were not equivalent within the cultural groups. This disproportion may be relevant because men tended to have more favorable attitudes toward smoking. Furthermore, American participants were from California, which is not representative of the country's regulations and prevalence of smoking (Shopland et al., 1992). However, these limitations may be partially offset by the strong differences in attitudes found between the two cultural groups. These findings support the notion that attitudes are important correlates of smoking behavior and suggest the important contribution of culture in defining attitudes.

Based on these findings, this researcher recommends that health professionals become cognizant of cultural attitudinal differences toward smoking before taking preventive actions in other countries. In addition, this study found numerous variations in the strength and direction of attitudes when taking into account smoking behavior and sex. These variations indicate that, in some cases, messages directed toward changing smoking attitudes should be made specific to particular targeted groups of smokers.

Researchers should conduct more comparison studies on college students' attitudes toward smoking. Future studies should obtain more representative data from throughout the United States, and additional cross-cultural studies should be conducted on attitudes toward smoking. Finally, because France is currently reinforcing its policies regarding prevention by banning smoking in more public places. In a few years, an interesting observation would be data from a similar study examining the impact of stricter smoking regulations on smoking attitudes. Conducting such a study and comparing that data to the present study would help to assess how resistant cultural influences are to such changes.

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Don't Know Much About Sexual Anatomy: A Survey of Undergraduate Knowledge

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This study examined knowledge of sexual anatomy using a 25-question survey distributed across disciplines in three North Texas community college districts. The sample consisted of 483 community college students. The survey consisted of 20 multiple-choice, sexual anatomy questions and five demographic questions and. Results indicated that knowledge of sexual anatomy varied significantly by gender, classification, and previous courses taken by participants. Findings suggest that there is a general lack of knowledge about sexual anatomy among two-year college students, yet anatomical knowledge is essential in maintaining sexual health as well as communicating with physicians, sexual partners, and children.

Knowledge of sexual anatomy is vital for proper sexual communication between patients and physicians, sexual partners, and when discussing sexual issues with children (Gordon, 1992; Heath & White, 2002; Irvine, 2002; Shabsigh, 2002). Previous studies tended to examine general sexual knowledge and did not focus directly on knowledge about sexual anatomy (Dilorio, Dudley, Lehr, & Soet, 2000; McCormick, Folcik, & Izzo, 1985; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Troth & Peterson, 2000; Voss, 1980). Such knowledge directly impacts effective communication. The ability to communicate about sexual issues, particularly those regarding anatomy, is important in maintaining sexual health and satisfaction (Byers & Demmons, 1999).

Research on the communication of sexual issues has focused primarily on preventing pregnancy and venereal disease or strengthening relationships, with little or no emphasis on anatomical knowledge and its importance to understanding sexuality (Dilorio, et al. 2000; Miller et al., 1998; Troth & Peterson, 2000; Voss, 1980.) Samples of Maine teachers who taught sex education in high school and middle schools in 1990 ($N = 274$) and 2000 ($N = 147$) showed the topics of STDs (81% and 82%) and pregnancy (78% and 78%) outranked genitalia identification (68% and 69%). When asked which topics should be covered in greater depth, few teachers thought spending more time on teaching genitalia identification (5% and 3%) was important (Caron & Moskey, 2004). In a study by McCormick, et al. (1985), only 8% of rural teenagers said they would like their sex-education courses to

include knowledge about the body and its role in reproduction. Despite limited or no information about anatomy in sex education, a human sex study of 1,300 college students by Valois and Waring (1991) indicated that men (18.9%) and women (9.6%) thought having anatomical information included in sex education programs was beneficial.

The doctor-patient relationship is one in which the ability to communicate sexual issues effectively is essential. Regardless of physical ailment or anatomical area of concern, "communication from doctor to patient and vice versa is the key to a successful consultation ... doctors may have trouble understanding a patient's explanation of symptoms, so patients may have trouble understanding a doctor's explanation of the diagnosis" (Jadad, Rizo, & Enkin, 2003, p.1294). Research indicates that without effective communication patients may be misdiagnosed, given an improper treatment, or caused distress or dissatisfaction (Baraitser, Elliott, & Bigrigg, 1998).

Knowledge of anatomy is also important in sexual communication with a partner. "People frequently report they are not happy, that their [sexual] needs are not being met. Seldom, however, have they defined what would make them happy or shared their needs with their spouse" (Travis & Travis, 1975, p. 164). Research has shown that the more partners communicate with one another about sex, the more satisfied they are with their sexual relationship (Byers & Demmons, 1999). Lack of familiarity with physiology and biological terminology would likely compromise communication and satisfaction.

Familiarity with anatomy is also important when discussing safer sex with a partner. Such knowledge is requisite to clear understanding of the means for disease transmission. Researcher have found that higher confidence levels regarding the discussion of safer sex, such as condom use, leads people to discuss safer sex with their partners (Dilorio, et al., 2000). Communication between college-age partners for the purpose of disease prevention has become critically important, especially because approximately half of all STD cases occurred in individ-

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uals in the college-age range, according to a study by the Center for Disease Control and Prevention (Associated Press, 2004).

Communicating with children concerning sexuality or sexual issues often is difficult. If parents are unfamiliar with anatomy, answering their children's questions may be harder. Direct parental involvement is limited and "parents traditionally fail to educate their offspring about sexuality, apart from providing basic facts about menstruation and, less often, procreation" (Troth & Peterson, 2000, p. 199). Troth and Peterson noted that parents are often in a monogamous relationship with an uninfected spouse, which has ensured them sexual safety; they may not be well enough informed about HIV and STDs to supplement their children's education. Gordon and Snyder (1983) found that parents handled sex education poorly, if at all.

Proper sex education for children can prepare them for future communication regarding sexual issues and anatomy and inform them about safe, healthy sexual habits. Ninth to twelfth grade students reported receiving more information about sexual topics from school-based sex education programs than from any other source (Somers & Gleason, 2001). Surprisingly, even though sex education programs are teenagers' main source of sexual information, many programs are unsuccessful in preparing their students for sexual encounters or sexual communication.

To receive federal funding for sex education programs, government regulations require schools to teach an abstinence-only curriculum (Hoff & Greene, 2000; Starkman & Rajani, 2002). The Kaiser Family Foundation (Hoff & Green) found that 34% of schools with a sex education program described their program as having an abstinence-only approach. These programs teach abstinence as the only option for preventing unwanted pregnancies and STD's, and they fail to provide students with any information regarding pregnancy, contraceptives, or STD prevention (Starkman & Rajani). These courses aim to prevent sexuality in teens but do not provide them with the necessary knowledge to protect themselves when they do become sexually active. Although there is insufficient evidence to say that abstinence-only programs are effective in preventing teenage sexuality, comprehensive sex education programs, which encourage abstinence and provide information about contraception and disease prevention, often delay intercourse and lead to safe sex practices, such as condom use (Starkman & Rajani).

Based on this literature review, we proposed several outcomes. We expected that age and experience would be related to knowledge about sexual anatomy, and that such knowledge would be related to the number of courses taken in biology, anthropology, human sexuality, anatomy, and health. In addition, we predicted that the level of sexual knowledge would generally be low because of the lack of emphasis of sexual anatomy in current sex education programs.

Method

Participants

Participants in this study were 483 college students attending four campuses across two community college districts in the North Texas region. The sample was a convenience sample. Participation was contingent on the cooperation of individual instructors to administer the survey and voluntary decisions by students.

Of the 483 participants, 40.4% were men, 59.4% were women; .2% did not specify gender. The majority of participants (56.7%) were in their first year of college, whereas those in the fourth year of college had the smallest representation (1.2%). Those students were the least represented group in this sample because our sample of two-year institutions consisted primarily of dual-enrolled students. Ages ranged from 16 to 51 years; the median and mode ages were 19 years. Of the participants, 84.5% classified themselves as single (not married), and biology was the most commonly taken class that would contribute to a student's knowledge about sexual anatomy; 126 participants reported having taken that course.

Procedures

We distributed the survey to the Biology, Psychology, Humanities, History, Sociology, and Health Education departments. We selected those departments to achieve a broad, multi-disciplined sample for this study, rather than a simple representation of a single department. Packages containing fifty surveys, as well as a letter of introduction and instruction, were distributed to individual professors across the departments. An informative e-mail was also sent to the professors receiving the packets. We asked them to distribute the survey and instruct the students that participation was desired but not mandatory and that anonymity was requested. After collecting the surveys from the students, the professors returned the packages to a specific collection location from which the researchers collected the packages.

Instrument

We constructed a survey that consisted of 5 demographic questions and 20 multiple-choice sexual anatomy questions (see Appendix). The demographic questions sought information about participants' gender, age, classification, classes taken, and marital status. The 20 questions related to sexual anatomy consisted of 10 questions related to female anatomy 8 questions related to male anatomy, and 2 questions that were not gender specific. Questions regarding sexual anatomy were formulated from information extracted from a current human sexuality textbook (Hyde & DeLamater, 2002) and from two human sexuality course instructors. Initially the survey contained 25 questions related to sexual anatomy, but using feedback from human sexuality course instructors, composition instructors, and a group of psychology students, we rejected five questions because of their ambiguity. We based scores for knowledge of sexual anatomy by assigning "1" for a correct answer and a "0" for an incorrect answer; 20 was the highest possible score.

Results

Results indicated that participants' gender, college classification, and type of previous courses were the variables most frequently associated with differences in knowledge of anatomy scores. The mean score for women ($M = 9.56$, $SD = 3.88$) was higher than for men ($M = 7.83$, $SD = 3.15$). Results of an independent sample *t*-test revealed that the difference was statistically significant $t(480) = -5.18$, $p < .001$.

An analysis of variance evaluating the differences in mean knowledge of anatomy score by college classification was significant, $F(3, 477) = 7.28$, $p < .001$. Participants in their senior year of college scored highest on the survey ($M = 14.67$, $SD = 2.58$). Students in their first year of college made up the majority of the sample and had the lowest mean score among the respondents ($M = 8.42$, $SD = 3.53$).

The type of course taken was related to knowledge about sexual anatomy for four of five courses. Participants who had taken biology courses ($M = 9.79$, $SD = 3.72$) answered significantly more questions correctly than those who had not taken courses in biology ($M = 8.52$, $SD = 3.62$), $t(476) = 3.35$, $p < .001$. Participants who had taken anthropology ($M = 11.06$, $SD = 3.72$) answered significantly more questions correctly than those who had not taken anthropology ($M = 8.80$, $SD = 3.68$), $t(476) = 2.49$, $p < .01$. Participants who had taken human sexuality ($M = 10.30$, $SD = 3.47$), answered sig-

nificantly more questions correctly than those who had not taken human sexuality ($M = 8.68$, $SD = 3.69$), $t(476) = 3.12$, $p < .005$. Participants who had taken anatomy ($M = 10.54$, $SD = 4.11$) answered significantly more questions correctly than those who had not taken anatomy ($M = 8.74$, $SD = 3.63$), $t(476) = 2.87$, $p < .005$. Results showed no significant difference in number of correct answers between participants who had taken general health ($M = 9.45$, $SD = 3.75$.) and those who had not taken general health ($M = 8.78$, $SD = 3.68$), $t(477) = 1.44$, $p = .150$.

Discussion

Although the number of female anatomy questions was greater than male anatomy questions, women were just as likely to correctly answer questions about the male anatomy, and men were just as likely to miss questions about the male anatomy. Thus, we decided that a bias in the number of female sexual anatomy questions did not account for the differences noted in score by gender.

College classification and previous courses taken were related to participants' level of sexual anatomy knowledge. Seniors scored highest and freshmen scored lowest.

The scores of participants who had taken a previous course in biology, human sexuality, anatomy, or anthropology were significantly higher than participants who had not taken those courses. Ironically, the mean score for students who had taken a health course was lowest and did not differ significantly from those who had not taken a health course. Sexual anatomy is generally covered in health class, but perhaps the topic was not emphasized in this course or there was a selection variable for those individuals taking that course.

Evaluation of the results and previous research indicates a need for further investigation about both anatomical and general sexual knowledge and its implications on communication and health. We designed this instrument to assess the general anatomical knowledge of two-year college students but did not assess how students' knowledge or lack of knowledge affected communication about anatomy to sexual partners or to their children, nor did we survey how much anatomical knowledge students received from doctors or parents. To maximize applicability and effectiveness of the research, future assessment of how anatomical knowledge affects communication is an essential next step for research.

A limitation of the study was that the sample was consisted of a methodical selection of instructors rather

than a random selection of students, risking a non-representative sample. Although the ratio of sampled women to men was not equal, it was representative of the schools' demographics. Accurate representation by classification, however, was not fully achieved, and there was a disproportionate number of freshmen included in this study.

In evaluating our instrument and research methods, we concluded that there would be benefits from acquiring demographic information about participants' ethnicity, religious background and involvement, existing level of sexual education, and extent of sexual activity. That information would allow evaluation about how those variables are related to sexual knowledge. Also instructive would be a comparison of scores among two-year institutions across the county to assess how different cultural areas and standards affect students' sexual knowledge.

Future research should also include students from four-year institutions because the evaluation of sexual anatomy knowledge is essential to providing students with more education in this area. Surveying high school students who have and have not completed sexual education courses would also be beneficial because that information would give an evaluation of students' sexual knowledge.

A goal for assessing sexual knowledge is to improve anatomical education as a way to develop children, adolescents, and adults' skills for future communication about sexual issues. Those skills could reduce misinforming their peers or children about sexual anatomy. Because many college students are sexually active or will become sexually active, having accurate knowledge about sexual anatomy is important. That knowledge will help them discuss safer sex practices and sexual health issues with their partners and physicians. Improving anatomical knowledge can help promote healthier sexual attitudes and will assist in developing confidence to discuss a wide array of sexual issues in relationships throughout life.

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Appendix

Anatomy Survey - General Information

This survey is being conducted by the Research Group of Psi Beta National Honor Society at Collin County Community College in order to assess anatomical knowledge amongst college students.

1. Age: _____
2. Gender
 - a. Male
 - b. Female
3. College Classification
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
4. Marital Status
 - a. Married
 - b. Single
 - c. Separated
 - d. Divorced
 - e. Widowed
5. Please check any of the following college level courses you have taken.
 Biology
 Anthropology
 Human Sexuality
 Anatomy/Physiology
 Any health related classes

Please Specify _____

Anatomy Survey - Survey Questions

1. The _____ is the external female genitalia.
 - a. vagina
 - b. vulva
 - c. cervix
 - d. uterus
 - e. I don't know
2. The clitoris typically _____ during arousal.
 - a. enlarges
 - b. becomes smaller
 - c. secretes lubrication
 - d. becomes less sensitive
 - e. I don't know
3. The American Academy of Pediatrics recently issued recommendations stating that the benefits of male circumcision are not significant enough for the AAP to recommend the procedure.
 - a. True
 - b. False
4. Which of the following statements about breasts is not true?
 - a. smaller breasts produce less milk
 - b. breasts are primarily composed of fatty tissue
 - c. breasts enlarge when a woman becomes pregnant
 - d. men also have breasts
 - e. I don't know
5. The testicles are located in the _____.
 - a. seminiferous tubules
 - b. scrotum
 - c. vagina
 - d. bladder
 - e. I don't know
6. Which of the following is a common indicator of sexual arousal in men?
 - a. decrease in body temperature
 - b. salivation
 - c. body begins to shake
 - d. nipple erection
 - e. I don't know
7. In most males, it is normal for one testicle to hang lower than the other.
 - a. True
 - b. False
8. What is the area between the vagina and the anus called?
 - a. perineum
 - b. introitus
 - c. epididymis
 - d. vulva
 - e. I don't know
9. The uterus is closest in size to a _____.
 - a. quarter
 - b. golf ball
 - c. fist
 - d. banana
 - e. I don't know
10. In most instances, lumps found in the breasts are _____.
 - a. malignant tumors
 - b. clogged mammary glands
 - c. fibroadenomas or benign cysts
 - d. cancer
 - e. I don't know
11. The _____ is cut during a vasectomy to cause sterilization.
 - a. epididymis
 - b. vas deferens
 - c. Cowper's gland
 - d. seminal vesicle
 - e. I don't know
12. What is the prominent male hormone?
 - a. testosterone
 - b. estrogen
 - c. progesterone
 - d. teratogen
 - e. I don't know
13. Which of the following is a function of the ovaries?
 - a. protect fetus during development
 - b. produce sex hormones
 - c. fertilize the egg
 - d. limit the number of sperm which reach the egg
 - e. I don't know
14. Where is the prostate located?
 - a. the root of the penis
 - b. next to the rectum
 - c. next to the testes
 - d. directly below the bladder
 - e. I don't know

Anatomy Survey - Survey Questions (continued)

15. _____ is involved in a typical hysterectomy.
- Removal of the uterus
 - Getting your tubes tied
 - Removal of a breast lump
 - Removal of the prostate
 - I don't know
16. What is the opening to the vagina called?
- introitus
 - perineum
 - vernacular
 - hymen
 - I don't know
17. Where is the G-spot located?
- clitoris
 - vagina
 - perineum
 - anus
 - I don't know
18. What is a Kegel exercise?
- squeezing the buttocks muscles
 - squeezing the pelvic floor muscles
 - strengthening the clitoris
 - strengthening the mammary glands
 - I don't know
19. What is the darker area surrounding the nipple called?
- fourchette
 - corona
 - areola
 - prepuce
 - I don't know
20. What is the function of the Cowper's gland?
- secrete droplets of fluids which appear at the tip of the penis
 - secrete vaginal lubrication
 - produce thrust for semen during ejaculation
 - produces food for the fetus
 - I don't know
-

What Do You See?

Effect of Backgrounds on Object Identification

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We tested the effect of semantic relation between backgrounds and foreground objects on identification by replicating and extending a study by Davenport and Potter (2004). We tested, 44 participants (10 men and 34 women; mean age = 18.63 years) from a state university. We varied two foreground objects' relatedness to a background. The number of foreground objects' relatedness to the background was two, one, or none. Instructions directed participants to identify the background and both foreground objects. There was a significant difference in the number of backgrounds and foreground objects correctly identified among the three conditions. Thus, relatedness facilitated the identification of backgrounds and foreground objects.

When perceiving scenes in the real world, does consistency have an effect on our perception of the scene? Or, can we identify backgrounds and foreground objects regardless of their semantic relationship to one another? Researchers have examined these issues by placing foreground objects against backgrounds that were either consistent or inconsistent with the foreground objects and by having participants identify elements of the scene.

In such experiments, some researchers have chosen to measure reaction time in an object identification task (e.g., Biederman, Glass, & Stacy, 1973; Biederman, Mezzanotte, & Rabinowitz, 1982; Boyce & Pollatsek, 1992). For example, Biederman et al. (1973) measured reaction time when identifying objects in coherent and in jumbled scenes and found that participants identified the target object more quickly when the object was placed against a related background. Boyce and Pollatsek also measured reaction time during an object identification task. Participants were shown a scene that consisted of objects placed in front of consistent or inconsistent scenes. The experimenters then moved one object back and forth, which the participants were asked to identify. The experimenters measured the length of time that passed before the participants fixated on the moving object. Boyce and Pollatsek found that the background context influenced the identification of the objects. Specifically, participants were able to identify objects more quickly when the objects were part of a consistent

scene than when the objects were part of an inconsistent scene.

Other researchers have chosen to study a participant's ability to identify a target object, versus studying reaction time. Specifically, researchers found that when they placed objects in front of a related background, participants identified the objects more accurately than when they placed objects in front of an inconsistent background (e.g., Biederman, 1972; Biederman et al., 1982; Biederman, Rabinowitz, Glass, & Stacy, 1974; Boyce, Pollatsek, & Rayner, 1989; Navon, 1977; Palmer, 1975). For example, Palmer showed participants a variety of contextual scenes followed by an object and instructed participants to identify the object. He constructed the scenes to form an appropriate context, an inappropriate context, or no context at all for the object that followed. Palmer found that when he showed objects after a consistent scene, participants identified the objects more accurately than when he showed objects after an inconsistent scene. Boyce et al. showed participants the name of a target object. They then showed a scene consisting of a background and several foreground objects, which were either related or unrelated to the background, followed by a mask that cued the location of one object in the scene. Participants had to determine whether the target object was located at the same location as the cue. Researchers found that when the target object was placed in a consistent scene, participants accurately identified target object more often than when it was placed in an inconsistent scene.

However, not all researchers have found a facilitating effect of background consistency on foreground object identification. For example, Hollingworth and Henderson (1998) found that the relatedness of backgrounds to objects did not have a significant effect on object identification. One explanation for this discrepancy could be the length of time participants saw the scenes. Hollingworth and Henderson showed the scenes for 200 ms, which was substantially longer than the duration of scenes in previous studies in which researchers presented scenes for 80, 100, or 150 ms (Biederman et al.

Frank Ragozzine from Missouri State University was the faculty sponsor for this research project.

1974; Boyce & Pollatsek, 1992; Boyce et al. 1989; Davenport & Potter, 2004; Palmer, 1975). Perhaps the significant result found during shorter presentation times was because background has an effect on object identification only during shorter presentation times. A longer presentation time may give a participant adequate time to perceive the entire scene, whether or not the foreground objects are related to the background.

Davenport and Potter (2004) also studied object identification against various backgrounds. Whereas most studies used line drawings or black and white drawings, Davenport and Potter used color photographs presented on a computer screen to test whether a different method of presentation produced results similar to previous studies. Additionally, previous investigators restricted participants to “yes” or “no” responses, whereas Davenport and Potter instructed participants to name the backgrounds and foreground objects. Specifically, researchers showed participants a scene consisting of a background and one foreground object. The scenes consisted of (a) a background with a related foreground object, (b) a background with an unrelated foreground object, (c) a background with no foreground object, or (d) a foreground object with no background. Davenport and Potter determined that the semantic relationship between a single foreground object and a background influences the accuracy of participants’ identification of the object and background. Specifically, Davenport and Potter found that participants correctly identified objects more often when shown in front of a consistent background than when shown in front of an inconsistent background.

The purpose of the present study was to expand on the Davenport and Potter (2004) investigation. Unlike Davenport and Potter, who used only one foreground object placed against a background, we presented participants with a set of scenes consisting of two foreground objects placed against a background. We this procedure because, as Davenport and Potter suggested, a person might expect that having multiple related foreground objects might give rise to a priming effect. Specifically, having an additional foreground object might activate representations for related objects, thus creating even greater facilitation in naming both the other foreground object and the background when all three elements are related. Therefore, in the present study, we presented scenes that could contain two foreground objects that were related to the background, one foreground object that was related to the background and one that was unrelated to the background, or two objects that were unrelated to the background. We instructed participants to identify the background and both foreground objects. We

hypothesized that participants would identify backgrounds and foreground objects more accurately when both foreground objects were related to the background than when no foreground objects were related to the background. Furthermore, we predicted that the number of correct identifications for scenes with one related object and one unrelated object would fall somewhere between the two other conditions.

Method

Participants

Forty-nine participants (13 men and 36 women, ranging in age from 18 to 24 years old, $M = 19.23$) at a state university participated to fulfill a requirement for undergraduate psychology courses. We obtained informed consent from all participants, and all participants received course credit for their participation. All participants included in data analyses had normal or corrected-to-normal vision.

We did not include data from five participants. Two participants did not have corrected-to-normal vision, two participants did not follow instructions, and one participant had the computer malfunctioned during testing. The statistical analyses included data from 44 participants. These participants were 10 men and 34 women, ranging in age from 18 to 24 years old ($M = 18.63$).

Materials and Apparatus

We used the software package, *SuperLab Pro*, to present stimuli. Stimuli consisted of pictures from the Internet. There were 18 backgrounds and 36 foreground objects. We chose backgrounds and foreground objects so that each background could have two related foreground objects. Table 1 contains a complete listing of backgrounds and foreground objects; associated with each background is its two corresponding related foreground objects.

To create a scene consisting of a background and two related foreground objects, we placed one background and its two corresponding related foreground objects into a scene. For example, a beach chair and an umbrella were placed in front of a beach setting.

To create a scene consisting of a background, one related object, and one unrelated object, we placed one background and one of its related objects and one unrelated object into a scene. We chose the unrelated foreground object pseudorandomly from the list of fore-

Table 1

List of Backgrounds and Foreground Objects Used as Stimuli

Backgrounds	Foreground Objects
Beach	Beach chair, Umbrella
Burning house	Firefighter, Fire hydrant
Classroom	Desk, Computer
Deck	Picnic table, Dog
Farm	Cow, Horse
Football field	Football player, Referee
Forest	Deer, Turkey
Highway	Motorcycle, Car
Ice Rink	Hockey player, Hockey goal
Lake 1	Duck, Swan
Lake 2	Boat, Jet ski
Living Room	Sofa, Recliner
Park	Runner, Bicycle
Snow	Skis, Igloo
Tennis Court	Tennis racquet, Tennis ball
Underwater	Dolphin, Whale
Yard	Swing, Slide
Zoo	Elephant, Giraffe

ground objects. Specifically, unrelated foreground objects were chosen such that they could not be unintentionally interpreted as being related to the background. For example, we did not place a horse in front of a beach setting. Additionally, objects similar in size were chosen to appear together in the scenes. For example, we placed a beach chair and student desk in front of a beach setting.

To create a scene consisting of a background and two unrelated objects, a background was chosen and two unrelated objects were placed into a scene. For example, we placed a car and a computer in front of an ice rink setting. These two unrelated foreground objects were also chosen in the same pseudorandom fashion as was used to choose one unrelated foreground object. As Davenport and Potter (2004) did, we considered the size and position of each object. Specifically, the sizes of all objects were proportional to the other components of the scene, and the position of all objects (on the ground or in the air) was consistent with their position in reality.

We used a Gateway personal computer. A standard 17-in. (42.3 cm) computer monitor presented stimuli. All stimuli were placed in the center of the computer screen; the screen resolution was 800 x 600 pixels. Heights of the foreground objects ranged from 1.3 cm to 14.3 cm. The

width of the foreground objects ranged from 1.3 cm to 16.7 cm. Participants recorded their responses on an answer sheet. The answer sheet contained spaces in which to write the name of the background, the object on the left side of the scene, and the object on the right side of the scene.

Design and Procedure

The design and procedure were similar to the design by Davenport and Potter (2004) and were approved by the university's Institutional Review Board. However, in the present study, two foreground objects were shown against each background. The variable of interest was object relatedness to the background. Specifically, backgrounds and foreground objects could be displayed in one of three ways: (a) two objects that were related to the background (the two related objects condition), (b) one object that was related to the background and one object that was unrelated to the background (the one related object condition), or (c) two objects that were unrelated to the background (the zero related objects condition).

We constructed and presented 54 scenes to each participant. Each participant saw 18 scenes in the two related objects condition, 18 scenes in the one related object condition, and 18 scenes in the zero related objects condition. Two random orderings (Sequence A and Sequence B) of the 54 scenes were created to control for possible left to right position effects of the foreground objects. We presented the scenes in both sequences in the same previously randomized order; each sequence was identical to the other. However, the foreground objects in each scene were reversed in terms of left or right position for the two sequences. We randomly assigned participants to either Sequence A or Sequence B.

On each trial, participants were presented with a fixation cross shown for 300 ms, a blank screen for 200 ms, and the scene for 100 ms. Participants were instructed to identify the background and both foreground objects. After the scene was shown, a screen appeared that prompted participants to write their responses on the answer sheet, followed by a screen that prompted them to press any key to begin the next trial. Participants were instructed to be as specific as possible when determining the name of the backgrounds and foreground objects. Once participants had finished writing their responses, a screen appeared that prompted them to press any key to begin the next trial. Up to three participants were tested at a time with the room lights on. Participants were tested on separate computers seated several meters apart to keep participants from seeing one another's answer

sheets. Participants sat approximately .61 m from their computer monitors, a distance at which they could clearly see the images on the monitor and easily reach the computer keyboard. Three practice trials familiarized participants with the task.

We used four participants in a pilot study. The purpose of that study was to get answers that we could use in the final data analysis. In the pilot study, participants viewed scenes we presented with a background and two related foreground objects for 500 ms. We used participants' responses, or some synonym for the answers, to backgrounds and foreground objects as the correct answers.

Results

One-way repeated measures ANOVAs were used to analyze the data. The number of foreground objects related to the background (two related foreground objects, one related foreground object, or zero related foreground objects) was used as one variable. For the purpose of analysis in the first ANOVA, only participant responses that contained the correct identification of all the elements in the scene (background and two foreground objects) were counted as a correct response. We determined the number of trials in each condition on which participants got all three items correct. Thus, the number of correct responses could range from 0 to 18 in each condition. There was a significant effect of the number of related foreground objects on the number of trials on which participants correctly identified all three scene elements: $F(2, 86) = 25.01, p < .001, \eta^2_p = .37$. Figure 1 depicts the significant differences for all paired comparisons. Using a Fisher's LSD, one-tailed, $p < .05$, we found that the mean number of correct identifications in the two related objects condition ($M = 9.318, SE = .399$) was significantly larger than the mean number of correct identifications in the one related object condition ($M = 8.705, SE = .454$), which in turn was significantly larger than the mean number of correct identification in the zero related objects condition ($M = 7.250, SE = .390$).

In the second ANOVA, the number of correctly identified elements in each scene (backgrounds and two foreground objects) was determined for each participant. On each trial, participants could score of 0 (no correctly identified elements), 1 (one correctly identified element), 2 (two correctly identified elements), or 3 (three correctly identified elements). For example, if on one trial, participants correctly identified the background and both foreground objects, they received a score of three for that trial. If on another trial, participants correctly identified

the background and one foreground object, they received a score of two for that trial. Thus, the number of correctly identified scene elements could range from 0 to 54. There was a significant effect of number of related foreground objects on the number of correctly identified elements in a scene: $F(2, 86) = 40.50, p < .001, \eta^2_p = .485$. Figure 2 depicts significant differences for all paired comparisons. Using a Fisher's LSD, one-tailed, $p < .05$, we found that the mean number of correctly identified elements in the two related objects condition ($M = 42.59, SE = .643$) was significantly larger than the mean number of correctly identified elements in the one related object condition ($M = 41.66, SE = .791$). Additionally, the mean number of correctly identified elements in the one related object condition was significantly larger than the mean number of correctly identified elements in the zero related objects condition ($M = 38.86, SE = .739$).

Discussion

Consistent with our hypothesis, there was a significant effect of relatedness of foreground objects to a background on participants' ability to correctly identify the backgrounds and foreground objects. There were more correct background and foreground object identifications in the two related objects condition than in the zero related objects condition. Furthermore, the number of correct background and foreground object identifications in the one related objects condition fell between the other two conditions.

Further analysis showed a significant effect of relatedness of foreground objects on the number of correctly identified elements in a scene. There were more correctly identified elements of the scene in the two related objects condition than in the zero related objects condition. Furthermore, there were more correctly identified elements of the scene in the one related object condition than in the zero related objects condition.

Our findings are consistent with the results of previous researchers (Biederman et al., 1982; Biederman et al., 1974; Boyce et al., 1989; Davenport & Potter, 2004; Navon, 1977; Palmer, 1975), in which researchers found an effect of object relatedness to backgrounds on the ability to identify an object. Collectively, these studies suggest that relatedness between backgrounds and foreground objects facilitated their identification. Specifically, semantically related objects and their backgrounds are correctly identified more often than unrelated objects and their backgrounds. Such a result could be because of a priming effect wherein representations of related objects are activated after first viewing another

object. Furthermore, our results support a contention that the more elements that are related, the greater the facilitation in naming the elements. For example, in the present study, performance in naming both objects and backgrounds was greatest when all three elements were related and was lowest when none of the three elements were related.

We used only brief presentation times. However, longer presentation times may not produce the same results, such as in the Hollingworth and Henderson (1998) study. Future researchers may wish to examine how the duration of the stimuli affects identifications when there is more than one foreground object. A longer presentation time may enable multiple fixation points, thus allowing the individual to identify all of the elements of the scene even when they are unrelated. Another interesting investigation would be to determine whether the relatedness of foreground objects to one another would have an effect on object identification. For example, researchers could include a condition in which the foreground objects are related to one another but both are unrelated to the background.

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Special Features

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The Special Features section provides a forum for three types of essays that should be of considerable interest to students and faculty. Students can address a variety of topics for subsequent issues of the Journal's Special Features sections. At the end of this issue, you can read about those topics; Evaluating Controversial Issues, Conducting Psychological Analyses—Dramatic, and Conducting Psychological Analyses—Current Events.

Controversial Issues

Video Games are Detrimental: Review of Negative Effects of Video Games

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Video games are a worldwide industry with annual sales of more than 10 billion dollars (Yi, 2004). That 70% of children in American households own video game systems (Roberts, Foehr, Rideout, & Brodie, 1999) reflects the games' popularity and suggests merit in studying potential effects of this medium and developing guidelines for the sale and censorship of games.

Interactions with video games can impact both individuals' behavior and society as a whole. For instance, video game players are more likely to exhibit aggressive behavior than non-violent game players (Sherry, 2001). Such aggression can promote crime and negative social behaviors that impact society. In addition to aggression, games are associated with social isolation, gambling, and health risks (Fisher, 1995). This article discusses a variety of negative effects of video games including social isolation, aggressive behavior, drug and alcohol abuse, and gambling.

Video Games and Behavior

Playing violent video games has a negative effect on a person's proactive, social and motivational behavior, and well being (Anderson, 2001). For instance, video games cultivate social isolation because video games are often played alone (Anderson). Other concerns include the effects of games on relationships. Games are also time consuming and addictive, and they commonly contain negative portrayals of women and men (Fantone, 2002). Some people fear that men and women will adopt those expectations and make unrealistic comparisons to their own relationships. For instance, many games portray women as weak, sexual, or extremely thin. Such images may lead players to expect women to act and look like the game characters. These expectations are unrealistic, and when they are not met, such expectations may harm personal relationships.

Other concerns focus on the aggressive behaviors that games could produce. Violent video games may be more harmful than violent television and movies because they are interactive, which requires players to identify with the aggressor (American Psychological Association [APA], 2005). One study (Sheese, 2005) compared the effects of video game violence with a person's cooperative behavior. The study also examined game violence in conjunction with cooperative decision-making skills. Sheese randomly assigned male and female undergraduate students, ages 18 years and older, to play violent or non-violent versions of the video game "Doom". After playing the game, the investigator separated participants into groups and gave them the opportunity to pick a partner. Once they selected a partner, participants had three behavioral options: (a) cooperate with their partner for mutual gain; (b) exploit their partner for their own benefit; or (c) withdraw from the interaction completely. Results showed that participants who played a violent version of the video game were much more likely to exploit their partner than the participants who played a non-violent version.

In addition, once participants selected two individuals and formed a team, they were asked to play a multi-

Richard Miller and Robert F. Rycek are editors of the *Journal's* Special Features section.

player version of the same video game (Sheese, 2005). The objective was to complete a maze in a timely fashion as a team, and to advance to the next round. All teams played either violent or non-violent versions of the video game. After 25 min of video game playing, participants had the option to cooperate with their partners or turn against them. Results revealed that 45 out of 47 participants in the violent condition turned against their partners. In comparison, 47 out of 48 participants in the non-violent condition decided to cooperate for mutual gain.

The author concluded that playing violent video games had negative effects on participants' social interactions. Playing violent games promoted a competitive demeanor and altered participants' motives. Playing violent versions of video games also encouraged participants to become hostile toward their partners and opponents (Sherry, 2001).

Other studies have confirmed the relationship between media and aggressive behavior. For instance, Huesmann (1986) reviewed several studies investigating the relationships between media and antisocial behavior. Some results indicated that after playing a violent video game aggressive behavior in children ages 13 to 17 years increased dramatically. In addition, individuals with high prior exposure to media violence behaved more aggressively than those with low prior exposure. These observations indicated that violent video game play could lead to the development of aggression-related behaviors. These aggressive behaviors are more likely to surface in the presence of social influences, such as playing violent games.

Aggression associated with the exposure to video game violence can also exist irrespective of the presence of any social influences that would ignite violence (Bartholow, 2005). Therefore, excessive exposure to playing violent video games can be associated with the development of aggression; this excessive exposure can trigger aggression in non-related as well as related situations.

Video Games, Addiction, and Gambling

There is concern among researchers that video games can be addictive or lead to gambling problems (Fisher, 1995; Wood, 2004). Violent video game players reported that playing electronic gambling devices such as video poker or video keno caused stimulating mental arousal, while delivering a sense of relaxation. In addition, participants who played video games excessively found they were a means to escape from their personal

problems (Wood). Such positive effects (escape) can reinforce the addictive nature from all types of video games.

Some researchers (e.g., Fisher, 1995) consider video games a form of gambling in which game players try to gather points instead of money. There is concern that the acquisition of such valuables can be addictive, even though they are intangible. Further, there is concern that video game playing can lead to gambling addiction because of the similarities between the two activities. Parallels between video games and slot machines include rewards, technological visualization, and elements of randomness. In an examination of risk variables related to youth, problem gambling and video game playing, Griffith (2000) and Wood (2000) reported that patterns from both the traditional slot machine gambling devices and home computer style video game playing shared certain common characteristics. In particular, youth problem gambling and video game playing were linked to receiving intermittent rewards. The rewards provided partial reinforcement for both types of activities, and larger rewards were more reinforcing (Wanner, 1982). Furthermore, Gupta and Derevensky (1996) noted that the use of color, graphics, and music in video games can be very stimulating and that such dynamic and interactive characteristics in games are particularly appealing to youth. Gambling activities are predominately dictated by laws of randomness that make it very attractive to youth and encourage their indulgence (Gupta and Derevensky).

Studies have investigated the link between video game playing and gambling. For instance, one study revealed that 58% of adolescent participants over the age of 12 years reported playing some sort of video poker gambling device at least once a week (Fisher, 1995). Another study found that adolescents video game player (vs. non-players) were more likely to acquire an addiction toward gambling sometime in their life (Wood, 2004).

Not surprisingly, video game play is associated with gambling. Technology has integrated many forms of video game technology into gambling machines and online gambling games (Griffith, 2000). Those similarities attract video game players to gaming. Thus, video games are potentially dangerous because they are addictive and can lead to gambling problems.

Video Games and Health

Video games are also associated with negative health outcomes. Sheese's data (2005) indicated that 27% of

participants reported they played video games because of depression or loneliness, or to escape their problems. Furthermore, 79% of participants who excessively played video games also frequently used alcohol, drugs, or tobacco (Fisher, 1995). Playing violent video games has also contributed to increased psychological arousal and blood pressure, variables associated with hypertension (Huesmann, 1986). Thus, games can have negative effects on health as well as behavior.

Conclusion

Negative effects of video games occur in people of all ages (Sherry, 2001). Much evidence indicates there are numerous hazards associated with video games, although we need much more research to understand their effects completely. Playing games promotes social isolation, harms social relationships, and promotes aggressive behaviors. Additionally, games are associated with gambling and can promote negative physical and mental health problems. Recognizing the ill effects of video games, the American Psychological Association adopted a resolution recommending that videogame violence be reduced (APA, 2005).

Because of these negative effects of games, parents, consumers, and distributors should more closely monitor selling and using video games. Psychologists can play an important role to inform the debate (Bornstein & Miller, 2006). For instance, they can inform parents about the risks and identify conditions under which game playing generates risks. Many parents are not aware that an electronic game rating system exists (Funk, 1999). Thus, psychologists and industry professionals should help educate the public about rating systems, related developmental issues, and the importance of parental supervision of children's media experience. Psychologists and industry professionals must also support media efforts to develop informed customers. Finally, researchers should continue to investigate the effects of video games. Although there is much more we can learn about the impact of playing video games, what is known is enough to argue that industry professionals and others should regulate games and inform consumers about potential risks.

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Are Video Games Inherently Harmful? Summary of Evidence Raises Doubts

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The popularity of video games has been growing since they first entered homes. A recent study indicates that their popularity has extended to a majority of American homes with 70% of children between the ages of 2 and 18 years live in a home with at least one video game system (Roberts, Foehr, Rideout, & Brodie, 1999). This popularity is also represented in monetary terms. Yi (2004) found that the \$10 billion video game industry is more profitable than the major motion picture industry. Given these statistics, the influence these games have on their players is a critical issue. The majority of research about the effects of video games has focused on violent video games, suggesting that they are negatively impacting those who play the games. Anderson & Dill (2000) indicated that violent video games are detrimental to society. Those investigators developed the General Affective Aggression Model (GAAM), which “integrates existing theory and data concerning the learning, development, instigation, and expression of human aggression” (p. 773) to predict future behavior. The authors concluded that exposure to video game violence can make players more aggressive.

A comprehensive examination of available research both questioned previous research (e.g., Anderson & Dill’s, 2000, research claimed that violent video games have negative effects) and revealed positive aspects of video games. Thus, a broad conclusion that video games are harmful is unfounded. The literature suggests that critics who condemn video games focus only on the negative aspects and ignore the benefits. The purpose of this article was twofold. First, I wanted to present research that mitigates the idea that violent video games cause violent behavior. Second, I wanted to identify and explore the positive impact that video games have on their players, including impacts on visual-motor skills and learning.

Challenging the Notion That Games Lead to Aggression

Although there is research (e.g., Anderson & Dill, 2000) suggesting that video games can cause aggressive behavior in players and society, there is more to the issue. Just as some studies confirm that video games are dangerous, other studies question that conclusion.

A review of research in which researchers drew links between violent media exposure and aggression also determined that violent media exposure did not lead to violent behavior (Savage, 2004). That study discounted the link claimed in previous studies for two reasons. First, past studies did not have a control for a tendency for aggression prior to the exposure. Second, there was a time lag between exposure and behavior that investigators had not pre-specified. Similarly, another study failed to find a substantial link between playing violent video games and violent or criminal behavior (Olson, 2004).

Researchers have pointed out that there are many other variables that could interfere with the relationship between games and aggression. One study (Bartholow, Sestir, & Davis, 2005) asserted that, because there are so many other variables that can affect aggression (e.g., genetic predisposition, prenatal or childhood behavior problems, cultural influences, personality processes, and impairments in certain sections of the brain), the effect of violent video games is likely minimal when considering these other variables.

Another study (Kirsh, 2003) concluded that causal relationships between violent video games and adolescent aggression are inherently flawed because humans undergo such significant developmental changes during that time. Kirsh pointed out that only a longitudinal study testing aggression before and after adolescence would be able to make a claim about an effect on adolescents. For these reasons, the link between games and violent behavior is questionable.

There are also concerns about the long-term effects of violent video games. Williams and Skoric (2005) conducted a study to determine if the effects found by Anderson and Dill (2000) using the GAAM model would extend to a longer time period. After participants played interactive violent games (massively multi-player online role-players), researchers assessed behaviors and behavior tendencies. Participants were randomly assigned to either the violent or nonviolent game and playing lasted for a month; the mean playtime was 56 hrs. The results

did not support the hypothesis that exposure to violent video games lead to aggressive behavior. Despite the longer period of time participants spent playing violent video games, they were no more prone to aggressiveness than they were before the experiment. Additionally, there was no significant difference in aggressive behavior between the treatment group (i.e., participants who played violent video games) and the control group (i.e., participants who played non-violent video games).

In sum, data from a variety of researchers disputes whether there is a relationship between video games and aggressive behavior. They point out the complexities of the relationship and question whether it exists at all. Although there is some evidence that playing violent video games can heighten aggression (e.g., Anderson & Dill, 2000), the effect is probably short-term (Williams & Skoric, 2005). To make definitive conclusions, we need additional research. There is insufficient evidence to claim that playing all games is harmful. The relationship is much more complicated and requires further investigation. Results from future investigation could refute the claim that violent video games are harmful and help protect children from negative effects.

Improving Visual Motor Skills

Although studies discussed earlier focused on the negative impact of games, other studies focused on finding the benefits of game playing (e.g., Green & Bavelier, 2003). Their research findings indicated that people can learn and improve iconic, spatial, and visual attention skills by playing video games. The authors reported the results of five separate studies. The first four studied video game players (i.e., participants who had played any kind of video game at least four days a week for at least one hour a day in the previous six months) and non-video game players (participants who had little or no video game usage of any kind during the previous six months). All four experiments established that video game players had a significantly higher capacity for visual attention when compared to non-players. Of course, this relationship could be because of a third factor (i.e., games more likely attract people with superior visual skills). To address this possibility, the fifth experiment was a test-retest design measuring non-video game players' visual attentional capacity before and after 10 days of playing action video games. Results indicated a significant improvement in capacity after game play. Thus, game play improved the abilities of those who were not game players, reducing the concern about self-selection.

Another study used the pretest-posttest design to determine whether playing a sports video game could actually improve performance in the real game (Fery & Ponserre, 2001). The study began by assessing the golf skills of 64 novice golfers. Participants played the golf video game for 10 days (20 trials a day), after which the researchers tested the novice golfers again. The study found a 59% improvement. These studies indicate that games can improve visual and motor skills.

Learning Benefits

Video games designed for educational development have a significant benefit. Rosas, et al., (2003) conducted a study to determine how video games influenced learning in school children. Researchers separated first and second graders into two groups. The treatment group played educational video games for an average of 30 hours over a three month period. The control group did not play video games. There were significant differences between the groups indicating that video games had a positive impact on learning. Researchers hailed use of video games to help children learn, especially because the children's motivation to learn also increased.

Another study found that using educational software led to higher achievement in reading and math (Murphy, Penuel, Means, Korbak, & Whaley, 2001). Findings surpassed researchers' expectations, based on earlier studies (Fletcher-Flinn & Gravatt, 1995; Kulik, 1994; Kulik & Kulik, 1991; Ryan, 1991), for the effectiveness of computer-based instruction,

Another scholastic achievement study found that playing video games increased student performance (Din, 2001). The design was a pretest-posttest study that measured academic achievement in kindergarteners before and after a period of video game play. The treatment period consisted of the children playing games related to the kindergarten curriculum on the *Lightspan Playstation* for 40 minutes five days a week in school and 30 minutes every evening for 11 weeks. The results showed a significant gain in reading and spelling (Din).

Although some games do not have educational advantages and could prove more harmful than beneficial, several studies indicate that some games can produce positive outcomes. This evidence provides hope that developers can design other games to promote benefits while minimizing disadvantages. We need additional research to identify the components of games that contribute to positive and negative outcomes.

Conclusion

This review of research about video games demonstrated that video games are not having an overwhelmingly negative affect on children. Even the respected research establishing the GAAM (Anderson & Dill, 2000) is compromised when the trials are stretched to a month (Williams & Skoric, 2005). Also, there are reasons to negate a causal relationship between violent video games and aggression or criminal behavior (Bartholow, et al., 2005; Kirsh, 2003; Savage, 2004; Olson, 2004).

Several studies that have supported a conclusion about the positive effects of video games (Din, 2001; Fery & Ponserre, 2001; Green & Bavelier, 2003; Murphy et al., 2001; Rosas et al., 2003) are limited to the specific applications for those games. This outcome is unfortunate because games used in those studies are often non-violent. However, the reported benefits are encouraging in that they may inspire research defending video games of all types. For instance, the violent nature of video games is unlikely to affect the relationship between game play and improved visual skills, although we need additional research to confirm this suspicion. Identifying those benefits is also important because they could be used to help reduce negative impacts of violent games (Bornstein & Miller, 2006).

In sum, video games do offer benefits that should be further explored through systematic research. As the popularity of games increases, discovering their negative and positive impact is important. In the meantime, concluding that all video games are inherently harmful is unwarranted.

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Arguments Mandating Parental Consent for Abortion in Minors

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There is intense debate about the right of a woman to terminate her pregnancy. Although the issue may be divisive on moral grounds, the Supreme Court decision, *Roe v. Wade* in 1973 entitled women to the right for abortion (Altman-Palm & Tremblay, 1998). The rule in *Roe v. Wade* was explicitly applicable to adult women, but the right for adolescent girls to terminate their pregnancies was unclear and complicated by the issue of parental consent. Currently, the majority of state jurisdictions in the United States require some form of parental notification or permission for a minor to obtain an abortion (Adler, Ozer, & Tschann, 2003). Those laws serve not to restrict the autonomy of adolescents but to ensure guidance to and protection for adolescents during the pregnancy.

There are many reasons why parental consent laws are and should be in effect. Adolescence is different than adulthood; this difference reflects adolescents' underdeveloped cognition, reasoning abilities, and perspective; all those qualities influence adolescents' ability to make decisions (Steinberg & Cauffman, 1996). The insight of an adult parent is necessary to facilitate adolescents making educated and rational choices regarding the outcome of their pregnancies. Parental support also affects minors positively with respect to emotional and psychological states, both of which are detrimentally affected following an abortion (Burr-Harris, 1999). These findings demonstrate that legislatures must instate and enforce laws affecting adolescent abortion.

One indication adolescents require adult guidance in important decision such as abortion is that juveniles are held as distinctive individuals within a court of law; courts considered adolescents less culpable for their actions. Steinberg and Scott (2003) asserted that adolescents differ from adults in their responses to situations, such as attitude toward risk, impulsivity, and formation of character. Such distinctions between adolescents and adults tend toward the rehabilitative versus punitive ideal of the juvenile court system. Adolescents' inability to make good choices regarding their criminal behavior, which is an attenuating variable in their guilt and punishment, implies that their overall decision-making processes are inept.

Teenage decision-making consists of many variables, one of which is the ability to view situations from various perspectives (Steinberg & Cauffman, 1996). Compared to adults, adolescents are less likely to consider perspectives outside of their immediate circumstances. Minors are less likely to foresee the future consequences of their decisions in temporal relation to their goals (Worthington, Larson, Brubaker, Colecchi, Berry, & Morrow, 1989). Adolescents are less capable of making good decisions because of their limitation to think abstractly about potential consequences, (Britner, LaFleur, & Whitehead, 1998).

Compounding this inadequacy is adolescents' unbalanced weight of risks and rewards. Steinberg and Scott (2003) found that teenaged participants considered fewer risks than adults while making a decision, but they generally based their outcome more on likely rewards than negative repercussions. This differential focus leads adolescents to take more risks than adults. All individuals experience this aspect of adolescence; therefore, we must consider risk-taking relevant to every adolescent (Trad, 1993). Teens are more likely to weigh the immediate reward of not being pregnant than potential negative consequences, such as procedural complications or regret, which may arise in the future. An adult's guidance can increase the likelihood that adolescents will make choices based evenly on risks and rewards.

Further compromising adolescents' ability to make consistently well-informed decisions is their characteristic impulsivity. Mood fluctuations and emotional instability contribute to rash assessments of situations and unpredictable behavior (Steinberg & Cauffman, 1996; Steinberg & Scott, 2003). Juveniles' precarious moods and emotions are difficult to regulate, and they compromise decision-making capacity (Trad, 1993).

Adding to the turmoil of teenagers' lives is the period of adolescents called moratorium. According to Erikson's theory of personality development, adolescents experience a normative identity crisis during which they integrate all of their psychosocial experiences and identifications into a conscious sense of uniqueness and direction (Ryckman, 2004). Confusion, generalized intolerance, and adherence to simplistic ideologies characterize this phase. The establishment of identity, and thus the end of psychological moratorium, rarely occurs before 18 years of age (Steinberg & Cauffman, 1996). According to Steinberg and Cauffman, adolescents' maturity and process of judgment are compromised until they have consolidated their identity. In the context of abortion, which is an emotionally charged experience, the turmoil

of adolescents' sentiment is bound to affect their cognitive evaluation of the circumstances. Making a decision about abortion during this stage of developmental immaturity would be unwise because identity is not stable. Parents, as adults, have formulated identities that serve as adequate bases for rational decision-making. Parents' input concerning abortion should reflect a more coherent state of mind and balanced viewpoint. They also typically have more experience being under stress and may be less likely to succumb to their emotions when making cognitive evaluation of a situation (Worthington et al., 1989).

Support during the process of deliberating an abortion and the abortion itself is particularly relevant to adolescents. Adolescents versus adults are more likely to report psychological adjustment problems after an abortion (Burr-Harris, 1999). Because the experience of abortion is more traumatic for teenage girls than for grown women, adolescents are in more need of emotional support; parents can be an effective source for this support. In a longitudinal study of distress after an abortion, Burr-Harris determined that familial support predicted lower levels of distress in adolescents. A law requiring parental consent for minors' abortions would mandate parents' involvement in their daughters' decision to terminate pregnancy and could influence their adjustment.

Physical side effects can also arise; complications from an abortion, such as hemorrhaging, can be life threatening and require immediate medical assistance (Trad, 1993). Because of these health risks, a minor's guardian must be aware of the abortion so that if complications occur, he or she can assist the teen in receiving treatment as soon as possible (Worthington et al., 1989). This action is a significant matter of parental responsibility that should be taken into consideration. Parents must maintain their children's health and well being, and with few exceptions, this outcome is all parents' intent.

Parent participation in the decision of adolescent abortion serves to guide the minor to the best outcome for the situation in the context of the girl's life. Minors' best interests are kept in mind; parents have that responsibility, and right, to raise their children and assist them in making important decisions (Britner et al., 1998; Worthington et al., 1989). The family is an autonomous unit within the state, and the integrity of the family cannot be devalued by taking away parental consent in children's major decisions.

Another benefit of parental consent laws is the deterrent effect it has on teenage abortion and pregnancy

(Altman-Palm & Tremblay, 1998). Altman-Palm and Tremblay attributed the lowered level of teen pregnancy in states enforcing mandatory parental consent for adolescent abortion to the psychological cost to the teen of involving her parents. The level of unprotected sexual activity is lowered because the adolescent wants to avoid the psychologically detrimental aspects of not only becoming pregnant but of informing her parents of the pregnancy.

There are clear reasons for mandating parental consent in adolescent abortion. Parents compensate for adolescent's developmental immaturity in decision-making processes. Adult input is integral to the minor making a good decision regarding her current and future life. Parents are also a source of comfort during a potentially distressful time. Finally, parental consent laws serve to lower the level of teenage pregnancies. These are all variables that reinforce the necessity for mandating parental involvement in teenage abortion.

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Minors Should Not Need Parental Involvement to Obtain an Abortion

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The topic of abortion has been a hot button issue since the Supreme Court ruled in *Roe v. Wade* in 1973 that abortion was legal and that a woman has the right to choose to end her pregnancy as well as the right to privacy. The Alan Guttmacher Institute (2003) reported that by age 45 years, one in three women would have experienced at least one abortion. In 2000, professional performed 1.3 million abortions, accounting for approximately 21% of all pregnancies. Ambuel (1995) found that from the estimated 233,000 unintended pregnancies involving minors, about 75% chose abortion, resulting in 176,000 abortions performed on minors 17 years old or younger. To prevent individuals from seeking unsupervised illegal abortions, which carry high risks for serious injury or death, there is a need for safe, accessible abortion (Adler, Ozer, & Tschann, 2003). However, since *Roe v. Wade*, many court cases have attempted to restrict the availability of abortion, such as *Webster v. Reproductive Health Services* in 1989, *Ohio v. Akron Center for Reproductive Health* in 1990, and *Planned Parenthood of Southeastern Pennsylvania v. Casey* in 1992. There have been many attempts to reduce the availability of abortion to woman, especially those who are under legal age. Reducing the availability of abortions to minors may occur by decreasing funding to family planning clinics, enacting laws that require waiting periods and consultation with a physician, and requiring parental involvement (Alan Guttmacher Institute, 2003). From among the attempts to reduce the availability for abortion, one approach requiring parental involvement in minors' abortion seems the one based exclusively on emotion, not on scientific understanding.

The rationale for implementing laws that limit availability of abortion lies in three key beliefs: there is great psychological harm in obtaining an abortion; minors are unable, because of their maturity level, to consent to an abortion; and minors would benefit from having parental involvement (Ambuel, 1995). Many investigators studied the effects of abortion and their relative risks. Adler et al. (2003) found that there are relatively few risks associated with abortion, particularly when compared to carrying pregnancy to full term. The mortality for women with full term pregnancies is .0092%. Although that number is quite small, it is still larger than the mortality for women having an abortion, which is .0003%. Some women experience psychological harm from abortion, but the population of women as a whole has more psychological dysfunction than those who receive abortions. In addition, amounts of mental stress are lower after an abortion than they were before.

There is evidence to suggest that the psychological harm from abortion is no greater in minors than adults (Adler et al., 2003). In comparing minors to adults, there was little difference. Although immediately after an abortion, minors had slightly lower satisfaction than adults, this difference became smaller over time. In comparison to minors who carried to full term, minors who received abortions experienced significantly lower levels of anxiety, higher scores in self-esteem, greater degrees of control over their lives, higher levels of education, greater financial stability, and incidences of repeat pregnancies. As these data suggest, abortion is no more traumatic than everyday life. In addition, these data reject the notion that parental consent is needed because of the psychological harm that would befall a minor.

Psychological harm is not the only basis for mandating parental involvement. Anti-abortion advocates have argued for mandating parental consent because minors' lack of maturity renders them unable to make consenting decisions. To demonstrate maturity, minors must be able to know the consequences, weigh the choices between what is right and wrong, integrate personal values, and choose freely what actions they would like to take (Ambuel, 1995). Newman (2001) used Piaget's theory to argue that by 14 years of age, children reach the highest stage of functioning that allows them to think hypothetically and reach a decision by weighing all the options. Thus adolescents are comparable to adults, and therefore they can consent to a multitude of procedures. Weithorn and Campbell (1982) reported that 14 year olds made the same educated decisions as adults when considering medical treatments. In addition, Ambuel reported that minors behaved similarly to adults when considering the

emotions connected to mothering, future goals, finances, and life-style. Although minors are similar to adults, there is variation within the minor peer group. Minors who chose abortion over childbirth were more mature than minors who chose childbirth.

Adler et al. (2003) reported that by at least age 14 years, minors possessed similar decision skills as adults. However, there were some variations between younger minors and adults. Certain minors were lower on specific scales of volition, global quality, and awareness of the consequences; yet these differences were only found in minors who decided to carry the pregnancy to full term. These data suggest that adolescents who chose to abort the pregnancy were functioning at a higher level than their peers (Adler et al.). Therefore, with regard to abortion and childbirth, minors who chose childbirth seemed to need parental involvement more than the minors who chose abortion. Ironically, there are no laws mandating parental involvement in childbirth.

Finally, a third argument for enacting parental consent laws is to facilitate parental communication. However, several studies (Adler et al., 2003; Ambuel, 1995) suggest that this communication is not necessary nor always the best course of action. The majority of minors inform their parents. From 35 to 91% of minors tell their parents even when there is not a mandate (Adler et al.; Ambuel). Nevertheless, there are still some minors who do not tell their parents, but in those cases, there is generally a good reason. Some of the common fears minors cited were rejection, anger, and physical punishment. In households where those fears existed, communication between parents and minors probably was not the best. Unfortunately, to avoid informing her parents, a minor may travel to another state to obtain an abortion or worse seek out an illegal abortion (Adler et al.). If courts intervened, they would likely cause severe detriment to the already stressed relationship between parents and children (Ehrlich, 2003). Yet, the parents still would not have the final say.

If the minor disagreed with her parents and would still like to obtain an abortion, she could apply for a judicial bypass. A judge would determine whether the minor was competent and, if not, then the best interest of the minor dictates prohibition of the abortion (Ambuel, 1995). Moreover, courts intervening and overruling parents' decisions would not necessarily facilitate future communication between minors and their families. In addition, the judicial bypass process would only prolong the pregnancy, putting the minor at greater physical risk with a late term abortion.

Currently there are 34 states that require some parental involvement to obtain an abortion; 21 states require parental consent (Alan Guttmacher Institute, 2005d). There is a long-standing tradition that states no longer consider individuals as minors when they reach the age of majority, which is commonly 18 years old. However, there is still great ambiguity and lack of consistency among states. There is considerable incongruence about what minors can and cannot do. There are many circumstances in which a minor is considered legally competent enough to agree to medical procedures, criminal charges, and other life choices (Newman, 2001). For instance, in 21 states, minors can obtain contraceptives without parental notification (Alan Guttmacher Institute, 2005a); 34 states allow access for prenatal care for minors (Alan Guttmacher Institute, 2005b); and 40 states allow minors to place their child for adoption without parental involvement (Alan Guttmacher Institute, 2005c). Although all of those situations might be stressful and parental involvement might be beneficial, present laws do not provide a mandate. Accepting the argument that minors need parental consent for an abortion is difficult when, ironically, there are no laws mandating that minors need parental permission to carry the pregnancy to term, which is a potentially harmful situation. Therefore, if the laws are willing to mandate parental involvement for abortion, they should also mandate parental involvement for other potentially harmful or stressful situations.

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phenomenon is only recent, however. For example, in the United Kingdom since the 1970s, psychologists and general practitioners have begun working together to improve primary mental healthcare (Vines et al., 2004). Since then, general practitioners have been diagnosing and treating patients with mood, behavior, and thought disturbances (Baron, et al., 2003). Clearly, there are practical reasons for this change, which likely include economic issues, time, rapport, experience, and education.

The economic situation of many countries often causes an ineffective healthcare system because they lack technology and resources. This situation forces citizens to rely primarily on general practitioners for their physiological and psychological needs. Thornicroft and Tansella (2004) support providing these services through general practitioners, with specialists for backup particularly in severe psychological cases. When there is not a great enough demand for psychological specialists, especially in rural areas, there are no referrals and general practitioners have to take on mentally ill patients (Orleans, George, Houpt, & Brodie, 1985). Relying only on psychiatrists for these services when they are inaccessible to clients in rural areas is impractical.

Insurance coverage is another detrimental economic factor. Seeking a psychiatrist is too expensive for many people, especially for those who are without insurance. Patients may not seek a psychologist because of lack of insurance coverage (Orleans, et al., 1985). As such, these patients are more likely to report their symptoms to a general practitioner because insurance will cover such visits. Giving diagnosing privileges to a doctor may benefit low-income patients.

Timing can distinguish between psychiatrists, psychologists, and medical doctors. Patients also sought general practitioners for their psychological symptoms more often than professionals in the mental health fields because of time issues. Making an appointment with a general practitioner is easier (Baron, et al., 2003). Doctors see several patients a day and can squeeze in more appointments when necessary, but psychologists are often overbooked and a client could wait weeks or months for an appointment.

A patient's comfort level can also determine which provider they see. Several studies cited in Baron, et al. (2003) have reported that elderly patients who have thoughts about suicide visit their general practitioners for these concerns. This tendency indicates that early intervention and treatment are essential duties for general practitioners because these doctors may be their patients'

Diagnosing and Treating Psychological Disorders in Primary Healthcare: Patients Benefit

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There is much controversy about the rights of general practitioners, psychologists, and psychiatrists for diagnosing and treating psychiatric disorders. According to Baron, Hay, and Easom (2003), providing good healthcare means treating the entire patient, rather than just a dysfunctional organ. Treating the mind and body is important for overall human functioning. Furthermore, Vines, Richards, Thomson, Brechman-Toussaint, Kluin, and Vesely (2004) recommended that the government provide stronger support for the collaborative work of psychologists and general practitioners. General practitioners working collaboratively with psychiatrists and psychologists may greatly benefit patients.

Most of the diagnosing of common psychiatric disorders, such as depression and anxiety, occur in the family doctor's office (Thornicroft & Tansella, 2004) This

last hope. Some people find telling their general practitioners, whom they have known for years and with whom they have good rapport, how they are feeling, but they are anxious about telling a new person about those feelings. Furthermore, patients may be uncomfortable with psychological labels, diagnoses, and treatments because of the implications these have for their self-concept (Baron, et al., 2003). Individuals may not want to view themselves as insane or crazy and prefer to normalize their symptoms as much as possible by seeking a general practitioner. Orleans et al. (1985) found that 74.2% of general practitioners reported that they treated patients who had psychological ailments because these patients simply resisted referrals to mental health specialists.

In addition to seeking doctors with whom they have a good rapport, patients also seek doctors who have the experience and education to assist them with their ailments. Physicians have a strong background in understanding physiological processes, making them qualified to prescribe medications for psychological disorders that have a physiological connection (Baron, et al., 2003). Thus, patients may benefit from early intervention and treatment that they can obtain in a primary care setting.

Patients with thought disturbances often have physical problems such as lack of exercise, unhealthy eating habits, and poor hygiene (Baron, et al., 2003). Doctors can monitor these mental and physical symptoms. Psychosocial adjustment problems, alcohol abuse, and somatoform disorders are some of the other psychological disorders with which general practitioners have experience (Orleans, et al., 2004). Some people may think that general practitioners do not have the education to diagnose and treat psychological disorders. To solve that issue, Vines et al. (2004) proposed a collaborative model in which doctors and clinical psychologists work together in treating clients. The authors recognized that neither the psychological nor physiological helper should be omitted from comprehensive care for the mentally ill person.

General practitioners have a strong educational background about the human body, making them highly knowledgeable about what is normal and abnormal functioning for body and mind. A common belief is that emotional stress can have an immense effect on the body by attacking the immune system, which leads to a vulnerability to diseases (Baron, et al., 2003). General practitioners understand this relationship and may be inclined to lessen the anxiety and depression causing the emotional stress so their patients can be healthy. Physicians' training included the ABCs of emergency medicine,

which includes airway, breathing, and circulation (Baron, et al., 2003). Baron, et al. suggested that physicians should also assess the ABCs of affect, behavior, and cognition.

However controversial diagnosing and treating psychological disorders is, one thing is certain; someone with the proper education and good ethical values must do it. Psychological disorders are not going to disappear any time soon. With better technology and research, psychiatrists, psychologists, and general practitioners will eventually come to an agreement on the duties for each and their relationship to diagnosing and treating mental illnesses. With the current progression of mental healthcare, there would great benefit to patients if psychologists, psychiatrists, and physicians worked together to diagnose more accurately and treat mental disorders in a collaborative model of mental healthcare.

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Treating Mental Illness: Are Medical Doctors Qualified?

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Most people know that medical doctors can legally prescribe medications for psychological disorders, although most psychologists cannot. Those people who

argue against psychologists having the right to prescribe medications claim that they lack the medical knowledge to prescribe these medicines safely. Some people might argue that medical doctors should not prescribe medication for psychological disorders. Physicians obviously have enough medical knowledge to understand the physiological consequences of prescribing medications, but they lack adequate knowledge about the psychological implications, information that is just as significant as medical information. Highlighting these concerns, Manning, Zylstra, and Connor (1999) stated that physicians' lack of time, poor attitudes, and deficient education, coupled with the stigma of mental illness, contributed to a problem with diagnosing and treating psychological disorders. Similarly, Srisurapanont, Garner, Critchley, and Wongpakaran (2005) believe that by fixing current problems such as lack of time, knowledge, and skills of general practitioners, prescribing behavior and attitudes could be improved. Because medical doctors do not receive enough education in psychology, tend to have a poor attitude concerning psychological disorders and treatments, and have a little experience with psychological research, they may not be best suited to treat mental illness.

The first weakness of medical doctors in prescribing psychotropic medications is that they receive a limited amount of training about psychological disorders (Liaison Committee on Medical Education [LCME], 2005). The focus of medical education largely concerns physical conditions rather than mental disorders and does not include training in treatment methods for psychological disorders other than medication (LCME). Therefore, no matter how well trained, physicians are probably not capable of treating mental disorders. According to Andersson, Troein, and Lindberg (2005), some authorities have criticized general practitioners for not identifying or treating depressive disorders adequately and stated that many doctors needed more evidence-based knowledge concerning depressive disorders (Andersson et al.). Those criticisms are important because depression is a common psychological ailment that professionals often treat by medication. In addition, Manning et al. (1999) stated that primary care physicians vary greatly in their recognition and treatment of psychological disorders and, by and large, general practitioners do not appropriately care for psychological disorders (Manning et al.). That medical doctors may not have the education in psychology required to trust them in treating mental disorders is an important acknowledgement.

A second concern is that physicians versus psychologists generally have a different attitude about mental ill-

ness. One cause for this difference could be their medical training that emphasizes treating mental illness like a disease that needs treatment by prescribing medications. Medications are important, of course; however, equally important is that care providers explore other treatment options. Unfortunately, Andersson, Lindberg, and Troein (2005) found that physicians who were most likely to prescribe anti-depressants were least likely to value psychotherapy as a valid treatment for depression, leading to a conclusion that many doctors will prescribe medications without exploring other treatment options. The same study showed that general practitioners have great faith in using medication to treat depressive disorders, panic disorders, obsessive-compulsive disorders, and social phobias. An inference from those data is that physicians will likely treat psychological disorders with medication but not other methods (Andersson, Lindberg, & Troein, 2005). Further, the influence of pharmaceutical advertisements may be contributing to an increase in the number of prescriptions for antidepressants. Most medical doctors agree about the influence of advertising, although they believe that many other people are not aware of this risk (Andersson, Lindberg, & Troein). This increase in number of prescriptions could mean that advertisements are encouraging inappropriate administration of prescriptions.

The last limitation of medical doctors prescribing psychotropic medications is that they have limited exposure to psychological research. General practitioners do not specialize in mental illness. Thus, medical doctors may not use information concerning the most up to date and, possibly, best treatment options for psychological disorders. Studies have shown that when considering treatment for a psychological illness, physicians tend to value their own experience much more than they do academic education and professional literature (Andersson, Lindberg, & Troein, 2005). Andersson, Lindberg, and Troein stated that placing such a low value on scientific research could mean that doctors are not able to assess a patient's mental state accurately and consequently are unable to provide the best treatment for their patients. Experience can and will play a role in the diagnosis and treatment of any disorder, but objective research is invaluable because it provides information that is not purely anecdotal.

There are several arguments against allowing medical doctors to prescribe psychological medications. Medical doctors simply are not adequately educated in psychology to be qualified to prescribe these medicines for the benefit of mental health. In addition to an inadequate education, doctors' primary treatment method tends

to be prescribing drugs because they are not trained in counseling or other techniques. Thus, although medications may be an important component to treatment, physicians may overlook the equally valuable contribution of psychotherapy (LCME, 2005). Finally, physicians do not research or even have faith in psychological studies, which provide the most up to date methods for treatment and diagnosis of mental illness (Andersson, Lindberg, & Troein, 2005). General practitioners are highly trained professionals in their field; unfortunately their field is not psychology. Therefore, relying on physicians to treat psychological disorders is inappropriate.

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Psychologically Speaking

Research on Social Influence: An Interview with Robert Cialdini

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Robert B. Cialdini, Ph.D. received graduate training in experimental social psychology from the University of North Carolina and Columbia University. He has held Visiting Scholar Appointments at Ohio State University, the University of California, the Annenberg School of Communications, and the Graduate School of Business of Stanford University. Additionally, Dr. Cialdini has been elected President of the Society for Personality and Social Psychology. He is currently Regent's Professor of Psychology at Arizona State University, where he has also been named Distinguished Graduate Research Professor.

Dr. Cialdini's bestselling book (2001) has been published in 20 different languages and in 23 different countries. Collectively, his books have sold over one million copies. Dr. Cialdini has been featured on NBC DATELINE, CNN, BBC, ABC, NPR and CNBC. His unique systematic approach to the applications of science makes him highly credible, widely recognized, and sought after by organizations hoping to implement behavioral change strategies.

Miller: Before we begin, perhaps a little background on the purpose of this interview might be helpful. The *Journal of Psychological Inquiry* publishes undergraduate student research. In addition, there is a Special Features section that serves a variety of purposes. That section is a forum for student essays on topical issues, critical analyses of media presentations, and articles that provide information of interest to both faculty and students related to the research process. We have asked you for this interview to explore your thoughts involving undergraduate students in empirical research. The journal grew out of discussions among faculty from the Great Plains area who have sponsored student presentations at state and regional conventions. We

began to ask ourselves, "And then what?" That question led to a discussion of the possibility of providing a forum for publishing student research. We think of the journal as a means for increasing the quality of undergraduate students' scholarship. So, that's the context in which we wanted to talk with you.

Sheridan: To begin, who did you admire when you were growing up?

Cialdini: I guess in those days, it was sports stars, which you can't do anymore, at least not in the same way, because of all their publicized moral lapses. Actually, I almost played professional baseball instead of going to college. I was a good enough athlete in high school to get an offer from a scout from the Philadelphia Phillies organization. They were willing to have me sign a contract to play minor league baseball in the lowest possible class D league, but scout said something very kind to me. He said "I'm going to have you sign this contract, but let me ask you a question. How good are you at school?" I said "I'm pretty good." He said "could you go to college?" I said yes. He said "would you graduate from college?" I said yes. He said, "Go to school, kid, because chances are that you will not graduate from the minor league. You're not good enough. I'll take a flyer on your chances; that doesn't hurt me, but it could hurt you."

Now suppose I had done this. Suppose I had decided to try to be the next Mickey Mantle. And then I tried, and maybe I even moved from a class D league to class A. Maybe even for a year or two I got to the majors. I wasn't good enough to last very long because I couldn't hit a slider. And so, after maybe five or six years, I would start coming down again into the minor leagues. And then, the last place I was

playing, that's where I would end up. Maybe I would be in Fort Dodge, Iowa. And after six years of trying to succeed at baseball, maybe I'd have a family. Maybe I would have a wife and a child, which would mean I couldn't just go back to school. I'd have to care for them. So, maybe I'd become the assistant manager of the Pizza Hut in Fort Dodge, Iowa or the sporting goods store there. As a consequence, I would be in a very, very different place than I am now.

I think there's a book to be written called "Forks in the Road". It would be about small things that change your direction markedly. For example, if this baseball scout hadn't been so kind to say to me "Look, follow your strengths; don't go where you have marginal strengths; go where you have your best strengths," where would I be right now? This experience tells you about the power of the situation. Not everything comes out of us. It comes out of us plus an interaction with the situation. The person and the situation interaction is what best predicts, I think. And that's a lesson of social psychology that I have learned personally.

Reznicek: So if we could back up a little further, you talked about the circumstances by which you got into experimental social psych. What about psychology in general? Who influenced you to be a psychologist and why did you choose psychology?

Cialdini: Well, that's a good question. I think the thing that influenced me to be interested in and inclined to psychology in the first place was a history of reading newspaper accounts of various kinds of research. You know, you'll see in the science section of newspapers articles about this or that study done by people at the University of Toledo or the University of Oregon. It seemed to me that the psychologists in those articles were always doing the most interesting things, as compared to the astronomers or the archeologists or whomever else you hear about in these accounts. So I took, very early on in my undergraduate career, an introductory psychology class. And that class solidified for me the recognition "This is what I want to do. This stuff lights me up. So this is where my path should lead."

Shell: What was your experience with research as an undergraduate student?

Cialdini: My experience with research as an undergrad was interesting in that it led to my first publication

and maybe the most prestigious publication of my life - in *Science* (Ressler, Cialdini, & Ghoca, 1968). It came as a result of an observation that I made in a laboratory class I was doing.

I was doing mostly animal behavior. I was taking a laboratory class in animal behavior and one of our tasks was to classically condition earthworms. And the way we did it was to put earthworms on a Plexiglas® plate that had a little motor underneath that would vibrate the plate. We also had a bright light. Now if you know anything about earthworms, they recoil from bright light. So we would turn on the motor, "bzzzzz", the thing would vibrate; then turn on the light and the worm would cringe. It would recoil. Then we would do it again. Vibrate the plate; turn on the light. Vibrate the plate; turn on the light. And then we asked, if we just turn on the motor, will it cringe out of classical conditioning, like Pavlov's dogs salivated to the sound of the bell?

Well my earthworm wasn't working out. It wasn't conditioning. It was a stupid earthworm. It wasn't picking up on the contingency, on the connection, the association. So, I was torturing this thing with this light. Finally, I gave up and I took the worm and put it back in a bucket. and I got a different earthworm. I brought it back to this plate that the previous earthworm had been on, and I put it on there. And you know earthworms are flaccid little spaghetti like things. This earthworm did a summersault in the air and tried to get off of this plate. And I thought, what was that?! And it did the same thing again. It literally jumped off the plate. I looked at the plate. And what had happened was that the first earthworm had exuded this white kind of slimy substance. If you have ever put a worm on a hook that's what happens. A white kind of coating that comes off of it. And it was contact with that substance that caused the second earthworm to be so reactive.

Well I called the instructor and explained what had happened; then I said "Watch this". And the same thing happened; this worm jumped. He looked at it and he said "We've located an alarm pheromone in earthworms that no one knows about. This is a signal that species send to one another to warn them against dangerous settings." They lay down what is essentially a toxic substance to other earthworms who when they touch it, get out of it. It is not that they know to get out of it. They find it aversive. And they find it so aversive that they get out of that setting. Maybe it's where another earthworm has been

stressed by a bird or some predator. They get out of there.

So we did a series of studies sending earthworms down tubes and on to plates where we had shocked other earthworms. When they touched it, they continued ahead if it was a control condition without the pheromone. If it was an experimental condition with the pheromone, they turned around and went back in the little Plexiglas® tube. That study was published in *Science*. It was my first publication, and so it was downhill from there! (laughing)

Miller: I think not!

Cialdini: But it was on the basis of that series of studies that I began working as a research assistant for that instructor over the summer. He paid me from a grant that he had. I was going to do animal research. We were going to study maternal environment in mice and things like that. But then I happened into this class on social psychology, and it changed my orientation. It didn't change my orientation to research, but it changed my orientation to the content of the work. If we go back to that earlier answer that I gave you about what got me involved in psychology in the first place, those newspaper stories were about human behaviors, not about earthworms. And so my real focus of interest was on human behavior and that was what resonated with me when I sat in on that class.

Walton: Based on your own experience or observations of other students' experiences working with faculty, do you have any suggestions or tips for undergraduates interested in research?

Cialdini: Well, it is important not to get involved in research with a faculty member who simply is available, but one who is doing work that is genuinely engaging to you intellectually. I almost went in the wrong direction because I was involved in this stuff on worms. I'm not really interested in worms, it was an accident. It was not what I was really interested in; but this guy was my instructor, and he had research funding.

So the idea is to interview faculty who are doing work that you know might be interesting to you and offer them your services as a research assistant. Faculty always need undergraduate research assistants. But what they're going to want and what they'll be impressed by is somebody who takes the

time to learn enough about them and their work to say, "This is what I really think is interesting - your work on this topic". And that may require interviewing some graduate students who work with that person. The graduate students can tell you not just what this faculty member has been doing in the literature over the past 10 years, but what this person is doing now, or what the future directions are for that individual. And the faculty member will be intrigued by your knowledge of that.

In fact, that's the sort of thing you should do when you apply to graduate school as well. Read the most recent work that a faculty member is doing. And, if this fits with your interests, you can honestly say that on your statement of purpose. That is the sort of thing that causes you to rise above the others in terms of the applicant pool.

Reznicek: The number of undergraduate students at research conventions and the number of undergraduate-authored papers in journals have really increased. How do you view those changes? What do you think is the value of these sorts of conferences and undergraduate journals for the undergrad?

Cialdini: Well, I think it's very valuable even for those undergraduates who don't go on to graduate study in psychology. In my presentation earlier at this conference, I was lamenting the extent to which the people in the Keep America Beautiful organization and the Petrified Forest administration, to whom I was showing our experimental results, were not willing to take the counsel of those data but were instead responding to another form of data, which was essentially self-report. They weren't getting the vital difference between self-reports on the one hand and a controlled experiment on the other. The more undergraduates that we can infuse with a recognition of the distinction between simply asking people what is going on and testing what is going on in a controlled fashion, the better off the society is in general. So, I am a great advocate of expanding the message of psychological science beyond the graduate level community in which we frequently work.

Sheridan: I did hear your presentation and how can the theory of influence be used to get these "closed cultures" such as the national parks system, who request our information but choose not to actually use it? How can we get them to accept our information as valid and to actually apply it in the situation?

Cialdini: Okay. Well this really goes to the other major research interest I have, which is the psychology of compliance with requests. I have actually written a book that says there are six different principles that if we load into our requests, increase the likelihood that people will say yes to us (Cialdini & Sagarin, 2005). For example, social proof - if you can demonstrate that other organizations have done what you are recommending with great benefit, others are going to listen more to that information than they will just to you. So, you need to keep a record of those instances where other organizations that have accepted the counsel of the sort that you are providing have succeeded. Just the fact that others like them have done it will help to convince new individuals to accept your advice. Another principle has to do with the idea of commitment and consistency. Let's say the forest service is committed to the goal of maintaining the integrity of the forest. Well, then you show them that what you are offering will allow them to be consistent with the commitment they have already made to that goal. Scarcity is another one of these principals, in which you tell people not only what they stand to gain by doing this, but what they stand to lose if they don't, because loss is the ultimate form of scarcity and "loss language" is more powerful than "gain language" when people are uncertain of what they should be doing in a situation. So those are some of the kinds of ways we can influence people.

Sheridan: So you're saying that it's a presentational issue.

Cialdini: It's a presentational issue once you have the evidence. Yes!

Shell: Getting back to what you were saying about your undergraduate experiences in research, how does that shape the way you deal with undergrads now?

Cialdini: Well, I think it is something that gives me the opportunity to empathize and take the perspective of the research assistants who work with me in my lab because I was one of them, and I try to empathize with that orientation. I still from time to time take classes at my university, undergraduate classes, like language classes, for example. I'll sit in on the class, to be in the class, take the test, do the homework, and I get to see what it is like to be an undergraduate. Consequently, I remember what it was like to be an undergraduate research assistant, and I try to structure the experience for my research assistants'

in the ways that I think were most helpful to me. My research assistants are typically working in groups with a graduate student and a faculty member, which gives students a lot of opportunity to interact among themselves. Very frequently the most important learning comes from the side, not from above. People get insights into things, and they recognize the importance of particular ways of being and doing things by talking to their peers. So, I try to arrange settings for that, where there are opportunities for those kinds of interactions to occur.

Walton: Do you believe that it is important for psychology students to venture into fields that are controversial, and if so, why?

Cialdini: I don't think that it is important for them to venture into fields that are controversial, but I certainly wouldn't bar them from doing it. If you are talking about areas like religion or false confessions where there are politically correct and incorrect ways to be, if there are interesting psychological questions there, we should not hesitate to go into those arenas. However, there will be costs associated with that because some people are going to be closed-minded to any outcomes that may develop from your work, and that can be frustrating. So there are pluses and minuses to doing that, but certainly it's nothing I would try to dissuade people against.

Shell: Considering your previous work, in our society we tend to be very vulnerable to the media and advertising. We are wondering what about your thoughts on the regulations of advertising?

Cialdini: My sense is that there is a function for regulation in protecting children, and there's a function for regulation in ensuring accuracy and honesty of the message that's being presented. Aside from that, I'm not much for censorship of ads or even commercial messages. I think that there's a backfire effect of censorship. Upon learning that something has been censored, people find that thing more attractive and, as a consequence, more valid as a result of feeling more attracted to it. That's what the literature on censorship seems to show. Censorship often has a boomerang effect. As soon as people recognize that the information has been banned to them, even if they haven't heard it, they become more favorable to the position that's been banned.

Miller: Let me just follow up on that. In your talk earlier, you were talking about descriptive norms. One of

the things that seems to me that the media does, today, is to take isolated events, and because of massive exposure, make them seem like common behavior. That's a concern.

Cialdini: That is a problem. When the media offer an unrepresentative picture of the true state of affairs, I think that is objectionable. What advertisers should be expected and indeed required to do is to provide not just accurate information, but representative information of the state of affairs. So, if you have one doctor who believes something, then playing that doctor's ad 150 times makes it seem as though that this is a widespread medical opinion. So, what's objectionable is not just providing inaccurate information, but providing unrepresentative information. I think this is ethically problematic.

Sheridan: That would apply also to the authority portion of your theory?

Cialdini: That's right, it would apply to any expert. But the same thing has to do even with peers; the extent to which advertisers show crowds rushing toward a particular product, or hands depleting the shelves, can present the mistaken impression that this product is wildly popular, even if they don't present the actual claim that it is. They don't say "we're the fastest growing," but if they show this image of the shelves being depleted by hands that are reaching and so on, that can provide another version of that message that I think is ethically questionable.

Miller: We've been wary of advertisers for a long time, but it strikes me that our news media are doing very similar things. I just wondered, do you think we are as wary or perhaps more vulnerable to the same kind of misrepresentation when it's not selling a product but selling an idea?

Cialdini: Yes, I think that is the case, and it's worrisome. And often, the problem with the media is that they are constrained to certain kinds of information. They almost never look at solid, scientifically-conducted research. Instead they go on opinions. Here's something that happened to me a while ago. I was asked by one of these television magazine programs, Dateline NBC, to assist them with a particular project that they had in which they wanted to look at the factors that cause people to help in everyday settings - things like, oh, a woman is locked out of her car and needs people to help her open the door. They asked me to consult them on this, and I said, "Well,

here's something you could do that would be almost a sure thing. You could show the affects of imitation in helping. Let's set up a situation where somebody, a street musician for example, is playing and there's a hat in front of him for contributions from passers-by. If you arrange so that you have a confederate walk in front of a randomly-selected person and put a contribution in the hat, you'll get significantly more observers putting in contributions." There's large literature on this.

So, we did; we set up something in the New York subway system. We had a street musician playing his guitar singing a song, and we did this experiment where we had a confederate drop a coin in the hat or, in the control condition, there was no confederate who did that. And we got exactly what we were interested in, in terms of confirmation of the prediction. Eight people made a contribution in the condition where we had a model compared to only one person in the control condition. Now the interesting thing to me about this was that we interviewed those eight people afterward as to why they decided to tip the guitar player and not one of them mentioned "I did it because the person ahead of me did it." No, they said, "Oh, uh, I liked the song that person was playing," or "I felt sorry for him," or "I had some extra coins in my pocket." Well, because we had a control group that also had those same things going for them, because they were randomly selected, we knew that wasn't the reason. We knew what the reason they gave was that they saw somebody do it first. But self-report is unreliable. People don't recognize their motives frequently. So here was what I thought was fascinating: The producers of the show cut out those interviews.

Reznicek: What?!

Cialdini: The most psychologically interesting thing, they cut out. I asked that same question, why? "Why are you doing this? I mean, that's fascinating! They did it, and they don't know why they did it!" The producers said, "Ah, well, we had time constraints, so we had to cut something" Well, here's what I think. Now, this is a bit of a conspiracy theory, but please indulge me in this. The producers were journalists; journalists only have self-report - that's all they have. They never have control groups - where the truth is. And, self-report can provide a flawed version of reality. Well, to publicize the infirmity of their typical, self-report approach on national television was not in their interests; so, I think they buried it for that reason.

Shell: You should write something on that.

Miller: I have to tell you when I was 10 years old my grandfather was commander of the American Legion in our town, and so I was designated to sell poppies. And so my cousin who was eight, we were standing outside this grocery store, and we were trying to sell poppies. And I noticed that it would come in groups. I mean a few people would start, and I would get a whole line of people giving us money for these poppies. So I said to my cousin, "Listen, go inside the store. When a number of people have come to the check-out line, get in front of them, come back out, stop and give me a quarter."

Cialdini: Ha-ha, good!

Miller: As a child I figured that out. I mean you just observe it.

Cialdini: Good example!

Miller: And you're right about the eight to one ratio; that's a huge difference, As a ten-year-old I could see there was this huge difference!

Cialdini: You know, I just saw a newspaper article about the guy who invented the shopping cart. It was during the depression. He bought a string of grocery stores, at a great price - he bought them because they were cheap. He had no experience in the grocery business. In those days, there were no supermarkets. You had little grocery stores and people carried baskets, and they put their groceries in the basket. Well, he went and watched what they would do while they were shopping. He noticed that when the basket got too heavy, people stopped shopping. So he said to himself, "Let's make it easy for them to carry the baskets." He had one of his employees create the first shopping cart, which was essentially a folding chair on wheels with a couple of baskets hanging off to the sides like saddle bags. It was a very strange looking apparatus. Nobody could quite recognize what this thing was. He had several of them made and he had them in the corner, and people looked at this and walked right by; they continued to use their hand-held baskets. Then he put up a sign that said these are shopping carts; you can wheel them around and use them. Still nobody used them. Then, he put up a bigger sign that gave information about how to use them. Nobody did it. He was about to give up, when he hit on one last idea. He hired people to use the cart. All of a sudden his customers fol-

lowed what others like them were doing, loving the convenience. The owner then patented the shopping cart and died with an estate of \$114 million. Why? Because he was perceptive enough to start asking the question, "Psychologically what gets people motivated to do something when they're uncertain?" When you're uncertain, you don't look inside yourself for evidence of what you should do, you look outside of yourself. Because you want to know what you should do, you look at people like you, and you follow them.

Sheridan: So do you think the visual message is actually more important than the verbal message?

Cialdini: Not necessarily, though could be. I mean you could hear that the majority of people are doing something and that recognition will trigger appropriate responding.

You know it looks like we're almost out of time before I'm supposed to get to the next meeting.

Miller: Maybe one last question

Walton: What are your future plans for research. You mentioned you are looking at compliance. Are you focusing on that in the future?

Cialdini: I am looking at compliance. This has been a long-term interest of mine. I continue to be interested in the study of norms in environmental settings. We're doing some research in which we're looking at a tendency of certain social communicators, public health communicators for example, to try to send messages that can have a backfire effect. On your campus, there is probably something called a social norms marketing campaign against alcohol abuse. What they do is put up signs that tell you that the average student at your university drinks no more than four or five drinks at a party. And they don't provide anything else because they don't want to preach; they just want to present information. What our analysis suggests is that this can backfire. We haven't done this with drinking, but we've done it with home energy conservation. If you tell people, "This is the average energy conservation in your neighborhood, and you are doing significantly worse than they are," these people improve. But telling people that they are doing better at saving energy than the average person in the neighborhood makes these people do worse. So, what that message about four of five drinks at a party will do, is cause

those people who are having seven or eight to cut down, but those people who are having only two are now going to feel that four or five is normal; and it's going to produce unintended, negative consequences.

We're doing some research now on the effects of these kinds of messages. We're doing this in neighborhoods where we actually read people's energy meters after putting door hangers on their doors that tell them where they stand relative to their other neighbors in terms of energy conservation.

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Notes:

Invitation to Contribute to the Special Features Section—I

Undergraduate students are invited to work in pairs and contribute to the Special Features section of the next issues of the *Journal of Psychological Inquiry*. The topic is:

Evaluating Controversial Issues

This topic gives two students an opportunity to work together on different facets of the same issue. Select a controversial issue relevant to an area of psychology (e.g., Does violence on television have harmful effects on children?—developmental psychology; Is homosexuality incompatible with the military?—human sexuality; Are repressed memories real?—cognitive psychology). Each student should take one side of the issue and address current empirical research. Each manuscript should make a persuasive case for one side of the argument.

Submit 3-5 page manuscripts. If accepted, the manuscripts will be published in tandem in the Journal.

Note to Faculty:

This task would work especially well in courses that instructors have students debate controversial issues. Faculty are in an ideal position to identify quality manuscripts on each side of the issue and to encourage students about submitting their manuscripts.

Procedures:

1. All manuscripts should be formatted in accordance with the APA manual (latest edition).
2. Provide the following information:
 - (a) Names, current addresses, and phone numbers of all authors. Specify what address and e-mail should be used in correspondence about your submission,
 - (b) Name and address of your school,
 - (c) Name, phone number, address, and e-mail of your faculty sponsor, and
 - (d) Permanent address and phone number (if different from the current one) of the primary author.
3. Include a self-addressed stamped envelope of proper size and with sufficient postage to return all materials.
4. Send three (3) copies of the a 3-5 page manuscript in near letter quality condition using 12 point font.
5. Include a sponsoring statement from a faculty supervisor. (Supervisor: Read and critique papers on content, method, APA style, grammar, and overall presentation.) The sponsoring statement should indicate that the supervisor has read and critiqued the manuscript and that writing of the essay represents primarily the work of the undergraduate student.

Send submissions to:

Dr. Richard L. Miller
Department of Psychology
University of Nebraska at Kearney
Kearney, NE 68849

Invitation to Contribute to the Special Features Section—II

Undergraduate students are invited to contribute to the Special Features section of the next issue of the *Journal of Psychological Inquiry*. The topic is:

Conducting Psychological Analyses – Dramatic

Submit a 3-5 page manuscript that contains a psychological analysis of a television program or movie.

Option 1—Television Program:

Select an episode from a popular, 30-60 min television program, describe the salient behaviors, activities, and/or interactions, and interpret that scene using psychological concepts and principles. The presentation should identify the title of the program and the name of the television network. Describe the episode and paraphrase the dialogue. Finally, interpret behavior using appropriate concepts and/or principles that refer to the research literature. Citing references is optional.

Option 2—Movie Analysis:

Analyze a feature film, available at a local video store, for its psychological content. Discuss the major themes but try to concentrate on applying some of the more obscure psychological terms, theories, or concepts. For example, the film *Guess Who's Coming to Dinner?* deals with prejudice and stereotypes, but less obviously, there is material related to attribution theory, person perception, attitude change, impression formation, and nonverbal communication. Briefly describe the plot and then select key scenes that illustrate one or more psychological principles. Describe how the principle is illustrated in the movie and provide a critical analysis of the illustration that refers to the research literature. Citing references is optional.

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1. All manuscripts should be formatted in accordance with the APA manual (latest edition).
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 - (d) Permanent address and phone number (if different from the current one) of the primary author.
3. Include a self-addressed stamped envelope of proper size and with sufficient postage to return all materials.
4. Send three (3) copies of the a 3-5 page manuscript in near letter quality condition using 12 point font.
5. Include a sponsoring statement from a faculty supervisor. (Supervisor: Read and critique papers on content, method, APA style, grammar, and overall presentation.) The sponsoring statement should indicate that the supervisor has read and critiqued the manuscript and that writing of the essay represents primarily the work of the undergraduate student.

Send submissions to:

Dr. Richard L. Miller
Department of Psychology
University of Nebraska at Kearney
Kearney, NE 68849

Invitation to Contribute to the Special Features Section—III

Undergraduate students are invited to contribute to the Special Features section of the next issue of the *Journal of Psychological Inquiry*. The topic is:

Conducting Psychological Analyses – Current Events

Submit a 3-5 page manuscript that contains a psychological analysis of a current event. News stories may be analyzed from the perspective of any content area in psychology. The manuscript should describe the particular event and use psychological principles to explain people's reactions to that event.

Example 1: Several psychological theories could be used to describe people's reactions to the destruction of the World Trade Center on September 11, 2001. Terror management research has often shown that after reminders of mortality people show greater investment in and support for groups to which they belong and tend to derogate groups that threaten their worldview (Harmon-Hones, Greenberg, Solomon, & Simon, 1996). Several studies have shown the link between mortality salience and nationalistic bias (see Greenberg, Simon, Pyszczynski, & Solomon, 1992). Consistent with these findings, the news reported that prejudice towards African Americans decreased noticeably after 9/11 as citizens began to see all Americans as more similar than different.

Example 2: A psychological concept that could be applied to the events of September 11 would be that of bounded rationality, which is the tendency to think unclearly about environmental hazards prior to their occurrence (Slovic, Kunreuther, & White, 1974). Work in environmental psychology would help explain why we were so surprised by this terrorist act.

The analysis of a news event should include citations of specific studies and be linked to aspects of the news story. Authors could choose to apply several psychological concepts to a single event or to use one psychological theory or concept to explain different aspects associated with the event.

Procedures:

1. All manuscripts should be formatted in accordance with the APA manual (latest edition).
2. Provide the following information:
 - (a) Names, current addresses, and phone numbers of all authors. Specify what address and e-mail should be used in correspondence about your submission,
 - (b) Name and address of your school,
 - (c) Name, phone number, address, and e-mail of your faculty sponsor, and
 - (d) Permanent address and phone number (if different from the current one) of the primary author.
3. Include a self-addressed stamped envelope of proper size and with sufficient postage to return all materials.
4. Send three (3) copies of the a 3-5 page manuscript in near letter quality condition using 12 point font.
5. Include a sponsoring statement from a faculty supervisor. (Supervisor: Read and critique papers on content, method, APA style, grammar, and overall presentation.) The sponsoring statement should indicate that the supervisor has read and critiqued the manuscript and that writing of the essay represents primarily the work of the undergraduate student.

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