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# AP<sup>®</sup> Research Academic Paper

## Sample Student Responses and Scoring Commentary

### **Inside:**

#### **Sample B**

- ☒ **Scoring Guidelines**
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- ☒ **Scoring Commentary**

AP® Research Academic Paper 2022 Scoring Guidelines

The Response...				
<b>Score of 1</b> <b>Report on Existing Knowledge</b>	<b>Score of 2</b> <b>Report on Existing Knowledge with Simplistic Use of a Research Method</b>	<b>Score of 3</b> <b>Ineffectual Argument for a New Understanding</b>	<b>Score of 4</b> <b>Well-Supported, Articulate Argument Conveying a New Understanding</b>	<b>Score of 5</b> <b>Rich Analysis of a New Understanding Addressing a Gap in the Research Base</b>
Presents an overly broad topic of inquiry.	Presents a topic of inquiry with narrowing scope or focus, that is NOT carried through either in the method or in the overall line of reasoning.	Carries the focus or scope of a topic of inquiry through the method <b>AND</b> overall line of reasoning, even though the focus or scope might still be narrowing.	Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.	Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.
Situates a topic of inquiry within a single perspective derived from scholarly works <b>OR</b> through a variety of perspectives derived from mostly non-scholarly works.	Situates a topic of inquiry within a single perspective derived from scholarly works <b>OR</b> through a variety of perspectives derived from mostly non-scholarly works.	Situates a topic of inquiry within relevant scholarly works of varying perspectives, although connections to some works may be unclear.	Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives <b>AND</b> logically explains how the topic of inquiry addresses a gap.	Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives <b>AND</b> logically explains how the topic of inquiry addresses a gap.
Describes a search and report process.	Describes a nonreplicable research method <b>OR</b> provides an oversimplified description of a method, with questionable alignment to the purpose of the inquiry.	Describes a reasonably replicable research method, with questionable alignment to the purpose of the inquiry.	Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.	Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.
Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	Conveys a new understanding or conclusion, with an underdeveloped line of reasoning <b>OR</b> insufficient evidence.	Supports a new understanding or conclusion through a logically organized line of reasoning <b>AND</b> sufficient evidence. The limitations and/or implications, if present, of the new understanding or conclusion are oversimplified.	Justifies a new understanding or conclusion through a logical progression of inquiry choices, sufficient evidence, explanation of the limitations of the conclusion, and an explanation of the implications to the community of practice.
Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	Enhances the communication of the student's ideas through organization, use of design elements, conventions of grammar, style, mechanics, and word precision, with few to no errors.
Cites <b>AND/OR</b> attributes sources (in bibliography/ works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	Cites <b>AND/OR</b> attributes sources (in bibliography/ works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	Cites <b>AND</b> attributes sources, using a discipline-specific style (in both bibliography/works cited <b>AND</b> in-text), with few errors or inconsistencies.	Cites <b>AND</b> attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited <b>AND</b> in-text), with few to no errors.	Cites <b>AND</b> attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited <b>AND</b> in-text), with few to no errors.

## Academic Paper

### Overview

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;
- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;
- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;
- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;
- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;
- Use organizational and design elements to effectively convey the paper's message;
- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between the student's voice and that of others;
- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.

Conserving the Cute: A Psychological Analysis of Tucsonan Hikers

AP Research

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### **Conserving the Cute: A Psychological Analysis of Tucsonan Hikers**

In recent years, environmental concerns have become increasingly prevalent (Friedman, 1992). As the depletion of natural resources continues at a rapid rate, demolishing ecosystems in its wake, the prevalence of various animal species will starkly diminish, some potentially nearing the brink of extinction (Msuya et al., 2019). In hopes of counteracting, or at least mitigating, these dire circumstances, it is pivotal that a means of acquiring necessary funding for wildlife rehabilitation efforts be implemented. As such, it is critical that we foster greater public interest and encourage additional societal involvement in addressing such pressing environmental issues, as, by doing so, we may be able to alleviate the heavy monetary burden currently faced by these conservation-geared institutions. This research paper aims to develop such a strategy through the utilization of cuteness appeals present within many endangered mammalian species native to Arizona. Specifically, it seeks to address the question, “what effect do Behavioral Activation/Approach System sensitivities—the physiological mechanism believed to control appetitive motivation (Gray, 1981, 1987a, 1990)—coupled with animals’ kindchenschema cute features—prototypical cute features as established in pertinent scholarly literature (Alley 1981, 1983; Lorenz 1943)—have on Tucsonan adult hikers’ desires to charitably donate to endangered mammalian species native to Arizona?” Starting from intrastate endeavors, such tactics, if successfully orchestrated, can slowly be adopted on a national scale, aiding in broadening the reach of and bolstering the success of conservation efforts.

As indicated by the previously posed research question, motivating people to expend money for the sake of rehabilitation or conservation efforts cannot be fruitfully accomplished with the implementation of one universal strategy as everyone possesses differing dispositions favoring varying messages and attractions. Thus, regardless of the success rate of utilizing

cuteness appeals, not everyone will be induced to aid in this environmental undertaking.

However, mobilizing even a small cohort of supporters and contributors will prove indispensable for minimizing future environmental detriment.

## **Literature Review**

### **Conservation Marketing Strategies**

At the grassroots level, conservation efforts are heavily reliant upon donations provided by the general populace which often consists of people who are highly, though often inadvertently, perceptive to visual cues (Brambilla et al., 2013; Martín-López et al., 2009; Metrick & Weitzman, 1996). In order to best appeal to such individuals, many wildlife rehabilitation organizations have utilized species' aesthetic appeals to bolster attraction and motivate monetary provisions (Brambilla et al., 2013; Martín-López et al., 2009; Metrick & Weitzman, 1996). Demonstrating high success rates, these agencies witnessed their donation rates surge upon implementing visually-tailored marketing tactics (Connelly & Brown, 1990). In spite of these efforts, a fair amount of non-contributors remain, primarily basing their decisions on a lack of interest for wildlife, disapproval of monetary distribution within wildlife rehabilitation programs, and/or a lack of money to contribute. This research paper aims to explore what motivates rather than disincentivizes donor behavior in relation to conservation efforts. Thus, I will not delve further into the rationale behind these non-contributory resolutions. Further research can be conducted here. It is important to note, however, the general disapproval regarding the allocation of wealth within such prospective donor groups which I will discuss shortly hereafter. This research paper will also, so as to minimize the effects of monetary standing on pecuniary contributions, solely gauge "willingness-to-donate" and do so within the context of a hiker population. Thus no monetary transaction will be conducted and my

respondents will, on average, have moderate financial stability given that they can allocate time to engage in recreational activities and in my survey procedure. This will mitigate the prevalence of socioeconomic status as a confounding variable in shaping engagement in charitable behaviors. Regardless of the reason behind not contributing, a majority of non-benefactors were still found to value the preservation of threatened and endangered animal species as seen in a New York study which found that 52% of non-contributors rated this as their highest environmental priority (Connelly & Brown, 1990). Thus, conservationists don't need to solely follow a strategy of market segmentation, targeting their efforts towards those they believe are more likely to support their cause, such as past donors. Rather, they can expand their target audience to non-contributors as well, an equally viable and untapped source of revenue (e.g. Aroean & Michaelidou, 2014; Dolnicar, 2002; Holbrook, 1996). This display of heightened care shown towards "threatened " species' statuses, is also a key reason behind the selection of endangered animals as the target visual stimulus for this study.

Not only can conservation efforts broaden in terms of donor demographic, but they can also extend to fairly represent a broader spectrum of animals. A majority of these aesthetically-geared marketing strategies are primarily employed on flagship species—organisms that are publicly promoted to raise support for biodiversity conservation (Veríssimo et al., 2011). It is pivotal for these institutions to push forth such visually appealing stimuli as the more aesthetic and subsequently more popular flagships on average receive forty-six times more funds than unattractive and thus lesser known species (Colléony et al., 2017). Though promoting this standard list of animals and simultaneously fostering a sense of familiarity serves to be a fruitful tactic in acquiring much necessary funding for conservation efforts, it fails to inform the public of the dire circumstances afflicting a wider array of organisms. As many donors concentrate their



money on a narrow set of efforts, the funding received by conservationists is siphoned off disproportionately, providing inadequate care to lesser known species. In order to best aid rehabilitation efforts in a manner beneficial to all organisms, a potential future application of this paper, this research study will not be utilizing flagship species nor species of varying relative familiarities—all organisms selected for this paper were listed as “endangered” so as to maintain a limited and consistent familiarity status.

### **Impact of Behavioral Activation/Approach System Sensitivities**

Though the notion that peoples’ dispositions favoring aesthetically pleasing organisms has been established in scholarly literature, this attraction is by no means universal. In fact, only those who have high behavioral activation/approach system (BAS) sensitivities are prone to impulsive altruistic behaviors when shown a visually appealing stimulus (Wang et al., 2017). Within the realm of study concerned with brain function and behavior, psychologist Jeffrey Alan Gray postulated two dimensions of personality, namely the Behavioral Activation/Approach System (BAS) and the Behavioral Inhibition System (BIS) (Carver & White, 1994). For the purposes of this paper, I will only be discussing BAS, specifically the component of BAS tasked with reward responsiveness which centers around impulsivity rather than anxiety proneness, an emotional disposition measured by relative BIS sensitivity (Carver & White, 1994). As briefly aforementioned, BAS is the physiological mechanism believed to control appetitive motivation (Gray, 1981, 1987a, 1990). This system is sensitive to reward cues. Thus, those who display greater BAS sensitivities, if expecting an impending reward, are more motivated to work towards their goals regardless of the ensuing energy expenditure (Gray, 1977, 1981, 1990). These individuals are also prone to executing whatever task is required of them for acquisition of said prize as doing so will propel their entrance into a positive emotional state. The neural basis of the

BAS is grounded in medial orbitofrontal activity as well as ventral striatum activation which is enhanced in individuals displaying elevated approach motivations when placed within reward-affiliated situations (Simon et al., 2009).

Within a given population, BAS exists on a spectrum; thus, different people react uniquely when presented with an attractive inducement. This partially justifies the presence of non-contributors in conservation endeavors as individuals who display low BAS sensitivities may appear apathetic towards wildlife rehabilitation efforts and aesthetic cues, making them less inclined to engage altruistically and expend their money for the sake of such undertakings. This relation between BAS sensitivities and willingness-to-donate has been established by some accredited studies; however, it still lacks sufficient support in pertinent scholarly literature and has yet to be observed or measured in laypeople who have less knowledge of ecological matters and are thus more likely to act sporadically, relying primarily upon their BAS to formulate their decisions to donate.

### **Cuteness Appeal as a Tool in Conservation Efforts**

One aesthetic cue that is prevalent in many animal species and commonly utilized by conservation marketers is cuteness appeal. As defined in academia, cuteness follows two distinct forms: whimsicality and kindchenschema. Whimsicality is associated with exuberant behavioral displays whereas kindchenschema follows the more traditional manifestations of cuteness and is marked by the possession of juvenile traits such as a relatively big head, round and protruding cheeks, large eyes, and a plump body with soft-elastic surface texture (Alley 1981, 1983; Lorenz 1943). For the purposes of this research paper, I will be focusing on kindchenschema cuteness factors.

The presence of these aesthetic characteristics is pivotal in shaping human behavior. When people see an animal in possession of infantile features, they sense from it a certain level of vulnerability that elicits their instinctive nurturing tendencies. Thus, caring for that animal and aiding in its survival proves to be an inherently rewarding stimulus for many (Hildebrandt & Fitzgerald 1978; Kringelbach et al. 2016). As such is the case, it seems likely that those with high BAS sensitivities would be inclined to engage in acts of conservation if it ensured they could play a role in maintaining the livelihood of kindchenschema cute animals, an inherently rewarding endeavor. Research conducted by Tingting Wang, Anirban Mukhopadhyay, and Vanessa M. Patrick corroborates this hypothesis, establishing that sustainable behaviors can be induced in high BAS individuals through the viewing of kindchenschema cute organisms. However this contention has very minimal experimental backing and has yet to be explored in relation to donation generation. Thus, in order to better substantiate this claim, I applied it to the facilitation of another prosocial undertaking: donation generation. In addition, I tested its applicability to a niche group of individuals, namely adult Tucsonian hikers. This sample population was chosen due to their propensity for engaging in environmentally conscientious endeavors and their presumed diversity in academic background which would hamper the prevalence of ecological experts composing my participants allowing for the subject body to constitute the decisions of lay people. In order to explore this research topic, I posed the following question: what effect do BAS sensitivities coupled with animals' kindchenschema cute features have on Tucsonan adult hikers' desires to charitably donate to endangered mammalian species native to Arizona?

### Method

Spanning from January through March of 2022, I attended various hiking events hosted by the Southern Arizona Hiking Club. At each I brought with me a set of 4 endangered animal posters possessing the following visual elements: a cute stimulus paired with a high BAS slogan, a cute stimulus paired with a low BAS slogan, a noncute stimulus paired with a high BAS slogan, and a noncute stimulus paired with a low BAS slogan (See Appendix D). In each case, cuteness was defined by the possession of prototypical kindchenschema cute features as identified in literature (Alley 1981, 1983; Lorenz 1943). In order to ensure that what I discerned as being “cute” was publicly perceived as such, I asked each respondent, after recording their responses regarding their willingness-to-donate (this procedure will be explained in greater detail later on in this paper), to rate the cuteness of the animal they witnessed on their poster on a 5 point Likhert scale (1 = “not cute at all” and 5 = “extremely cute”) (See Appendix A). This data was then analyzed using a one-way analysis of variance (ANOVA) to certify that what I predicted to be “more cute” was in fact deemed as such by our target audience. At this point in time, participants were also asked to rate their relative familiarity with their assigned animal (1 = “never seen before” and 4 = “seen too often/very familiar”). This portion of the study ensured that familiarity did not influence willingness-to-donate as this has proven to be an influential variable in similar studies observing conservation marketing strategies (Lundberg et al.). In order to ensure that the slogans were respectively BAS-evoking and BAS-inhibiting, I utilized the captions employed by a similar research study that likewise sought to find the effects of kindchenschema cute stimuli on prosocial behaviors, namely recycling (Wang et al., 2017). Serving as yet another manipulation check, I administered an additional study in which participants were only provided the slogans without the accompanying animal’s image and asked

the extent to which they wish to donate on a 7 point Likert scale (1 = “very little” and 7 = “very much”). This process was undertaken so as to determine whether the slogans were the sole cause or contributing cause alongside the animal images to alterations in participant willingness-to-donate upon seeing the posters.

Once equipped with all four aforementioned posters, I met with the hikers privately. I asked for their informed consent of all procedures that were to take place, making sure to clearly state what task they were expected to perform—looking at a poster and responding to the subsequent survey questions—and what kind of data would be recorded—information regarding personality type and willingness-to-donate (See Appendix C). I also noted how said data would be collected—in oral and written formats. So as to disclose a purpose behind my data collection, I provided the following statement to each participant: “a local animal protection agency has designed a poster to generate donations to help save endangered animals native to the Sonoran Desert and I am interested to hear your reaction.” I didn’t divulge any further minutiae regarding this project’s goal so as to best prevent response bias and ensure the accuracy of my results.

After the adjournment of this briefing, I used a random number generator ranging from one to four—one representing the first poster, two the second, and so on—to randomly assign each participant a poster to view. This process of random assignment allowed me to establish a causal link between BAS sensitivity and willingness-to-donate driven by cute incentives in the analysis section of this paper. Upon assignment, the participant saw their allotted poster for no longer than 8 seconds and was promptly asked “to what extent are you willing to donate to this species?” on a 7 point Likert scale (1 = “very little” and 7 = “very much”) that was displayed on the poster itself. The primary purpose for the imposition of this stringent time restraint was to ensure that the participant answered impulsively (Carter and White, 1994). This prevented a

more thought-out, rationalized response from being generated, ensuring that only the individual's BAS and their interactions with the cute image would be driving their decision. Additionally, I did not inquire into monetary thresholds, as what is believed to be a significant or menial financial contribution may differ based on socioeconomic status and this research's goal was solely to gauge "willingness-to-donate," not the quantity of that donation. All responses for this portion of my study were orally received and personally transcribed (See Appendix A).

Following this verbal exchange, I provided each participant with a survey gauging their BAS Reward Responsiveness (See Appendix B). The questionnaire provided was developed by Carter and White, well-established figures in the field of psychology known for their research into dimensions of personality, so as to ascertain the effect BAS had on influencing participant decisions. Whilst my respondents were completing the survey, for which they were not given a time restraint, I continued the all aforementioned procedures with the remaining participants.

## **Data Analysis**

### **Cuteness Manipulation Check**

In order to ensure that the image bank consisted of visual stimuli of varying degrees of cuteness, primarily one cute and one less cute picture, a one-way analysis of variance (ANOVA) was employed. This statistical test is used to determine whether or not the means of varying groups of interest are statistically distinct from one another. If the p-value derived from this test is less than the alpha value employed, the null hypothesis, which states that there is no difference in opinion between the cuteness of both images, can be rejected. It was deduced that the  $M_{\text{cute}} = 4.179$  and that the  $M_{\text{noncute}} = 2.071$  with a p-value of 0, which was less than our alpha value of 0.05 ( $p < 0.05$ ). Thus, what I discerned as possessing more kindchenschema cute factors and thus appearing more outwardly "cute" was, in fact, subjectively perceived as such. The chosen alpha

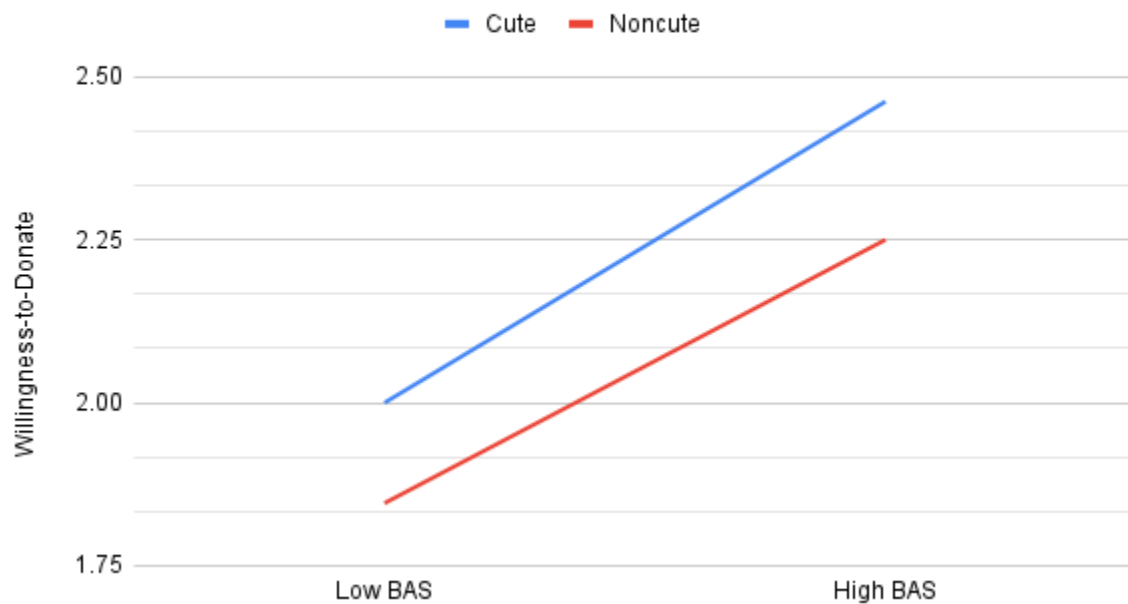
value was set at 0.05, representing a 5% chance of a Type I error/“false positive” occurring. This low risk of error ensures the maintenance of high internal consistency.

### **Familiarity Effect**

A two-way ANOVA was conducted so as to determine if familiarity, another factor proven in related scholarly texts to affect willingness to donate, was present as an additional source of variation in the measurement of this dependent variable. In doing so it was determined that the F statistic, the variable used as a test statistic in ANOVAS, valued 1.523 and that the F critical value, which is used comparatively with the F statistic to make conclusions about the acceptance or rejection of the null hypothesis, valued 1.592. As  $F_{stat} < F_{crit}$  and the p-value is 0.069 which is greater than the alpha value of 0.05, I can't obviate the influence familiarity has on willingness to donate.

### **Linear Regression Analysis**

#### **The Influence of Cuteness and BAS on Willingness-to-Donate**



Data for the mean willingness to donate based on kindchenschema “cute” visual stimuli and BAS-piquing text was calculated and a linear regression of all pertinent variables was conducted, producing the graph pictured above. As can be qualitatively deduced, the lines relating all three variables—BAS, cuteness, and willingness-to-donate—do not run strictly parallel to one another. This is indicative of an interaction effect being present which signifies that a combination of both BAS and cuteness were, in fact, in play when shaping the respondents’ willingness’-to-donate as per their survey responses. This interaction effect was significant as well given that the t-value extrapolated from running a statistical analysis on this data set measured 7.776 which is far greater than the recommended minimum threshold of +2. The presence of a larger t-value here offers greater confidence in the reliability of our data as it is indicative that the trends analyzed aren’t the result of a chance occurrence and are statistically significant. Additionally, the p-value measured 4.809E-10 which is far smaller than the alpha value of 0.05 further substantiating the link between cuteness and BAS and their joint influence on willingness-to-donate. The means of solely BAS-impacted returns as well as solely cuteness-impacted returns remained distinct from one another ( $M_{\text{cute}} = 2.231$  vs.  $M_{\text{noncute}} = 2.048$ ;  $M_{\text{highBAS}} = 2.356$  vs.  $M_{\text{lowBAS}} = 1.923$ ) which is demonstrative of their independent impacts on willingness-to-donate as well. This effect is commonly termed the main effect, of which there are two present. No other effects were recorded as they were deemed statistically insignificant with a p-value of less than the set alpha value of 0.05.

### **Spotlight Analysis: Cuteness**

Subsequent to regressing respondents’ altruistic intentions, a spotlight analysis was conducted on the following participant categories: those who received a poster with high BAS-stimulating text and those who bore witness to a poster with low BAS-stimulating text.



Within the high BAS group,  $M_{\text{cute}} = 2.6$ ,  $M_{\text{noncute}} = 2.4$ ,  $t = 2.671$ , and  $p = 0.116$ . Though the t-value is significant, being greater than 2, albeit by a small margin, the p-statistic exceeds the set alpha value of  $\alpha=0.05$  suggesting that among high BAS participants, cuteness did not have much of an effect on their willingness-to-donate. Conversely, within the low BAS group,  $M_{\text{cute}} = 2.8$ ,  $M_{\text{noncute}} = 2.6$ ,  $t = 6.553$ , and  $p = 0.023$ . Here not only is the t-value significant ( $t > 2$ ), but so too is the p-value ( $p < \alpha=0.05$ ). This suggests that among low BAS participants, there is a positive effect of cuteness on willingness-to-donate. As a random assignment of posters to respondents was employed throughout the entirety of the surveying procedure, this interaction is casual in nature, meaning that the presence of a cute image did, in fact, directly motivate those who displayed low BAS sensitivities to be more inclined to donate.

### **Spotlight Analysis: BAS**

Referring back to the aforementioned linear regression graph, the slopes of the lines displayed can be analyzed to establish a causal relationship in which the possession of a high or low BAS sensitivity can prompt an individual who bears witness to a cute image to display a heightened or minimized willingness-to-donate. Looking at the blue curve which indicates the presence of a cute image, the t-statistic for this line valued 4.364 ( $t > 2$ ) and the p-statistic for this line valued 0.049 ( $p < \alpha=0.05$ ). This is indicative of a statistically significant positive effect of BAS on bolstering one's willingness-to-donate upon looking at a cute animal. This trend is continuously present when observing the red curve which is indicative of a noncute image. The t-statistic here valued 7.303 ( $t > 2$ ) and the p-statistic valued 0.018 ( $p < \alpha=0.05$ ). This demonstrates that, regardless of cuteness, those who display an active BAS and are exposed to BAS-stimulating text are more inclined to engage in philanthropic acts such as donating to an endangered species fund. That being said, when solely shown a BAS-stimulating slogan such as

“Donate NOW!” as opposed to “Please Donate”, the participants donation tendencies weren’t significantly altered ( $t < 2$ ;  $p > \alpha=0.05$ ), underscoring the significance of designing a poster with both a visual stimulus and accompanying text in order to invigorate the participants’ willingness-to-donate.

## **Conclusion**

### **Findings**

As identified in the analysis portion of this research study, the combined effect of kindchenschema cute stimuli and BAS-evoking text does, in fact, bolster the willingness-to-donate of adult Tucsonan hikers. This both supports the findings of Tingting Wang, Anirban Mukhopadhyay, and Vanessa M. Patrick who found a similar link between BAS, cuteness, and the prosocial endeavor of recycling as well as corroborates the rationale behind Connelly and Brown’s implementation of visually-tailored marketing strategies, justifying why this strategy was as fruitful as they had observed. Furthermore, I am able to extrapolate these trends to encompass the entirety of the adult Tucsonan hiking population due to the employment of a random selection of participants and a random assignment of posters to hikers which allows for a more representative sample population with limited sampling bias.

### **Changes in Hypothesis**

Though there was, in fact, a significant positive effect of BAS and cuteness on willingness-to-donate, the isolated impact of cuteness fell short in individuals displaying a high BAS. This ran quite contrary to our initial predictions which contended that those who displayed high BAS sensitivities would be more motivated to expend money for conservation efforts if they bore witness to cute images, as doing so would ensure the acquisition of the following forthcoming reward: the preservation of cute animals in the subjects’ local ecosystem. It is

plausible, as all participants were aged well beyond 25 years old ( $M_{\text{age}} = 65$  years old), that their fully developed prefrontal cortices played a role in such displays of impulse control notwithstanding their relative BAS sensitivities (Arain et al., 2013; 2021). However, choosing elderly residents as opposed to a younger demographic as the experimental units of this study is still warranted given their comparably extensive time availabilities and readily disposable incomes; it is hypothesized that these individuals would be more generous with their expenditures given that they have already wrought monetary stability in their lives. Additionally, this unforeseen neutral influence by no means obviates the main premise of this paper which contends a statistically significant combined impact of BAS and cuteness on willingness-to-donate.

### **Limitations**

In regards to limitations that could have restricted the scope of the results computed, the following two variables are the most conceivable: variations in the participants' hiking avidity and the gender makeup of the respondency. Related closely to the concept of avidity are those of familiarity and environmental conscientiousness. When measuring the willingness to engage in conservation efforts among individuals who regularly hike, the researcher is more likely to bear witness to subjects who showcase a greater affinity to environmentally beneficial endeavors. Subsequently, members of this population possess greater knowledge regarding the threats afflicting various species in their vicinity, motivating them to display a heightened willingness to donate to our study. The inverse of this trend would presumably persist for those who are less active in their hiking pursuits. The impact of gender, on the other hand, is less clear. Though there is a chance that traditionally promulgated gender roles could elicit certain responses, whether those be endearing, and thus strengthening altruistic inclinations, or apathetic, and thus

minimizing donation tendencies, this association has yet to be substantiated by relevant texts. In fact, the impact of this potential confounding variable on prosocial endeavors has been discredited by pertinent scholarly literature, including notable studies published by Carter and White. However, in spite of this past precedent, gender cannot be completely overlooked as a potential source of response bias, especially given that it was not tested in this paper. Aside from these two viable sources of error, no other limitations were foreseeable and subsequently documented. The sample quota that was necessary to adequately establish all aforementioned conclusions was met (Required sample size for a population of 60: 52 people; Confidence Interval: 5; Confidence Level: 95%) and thus no issues stemmed from this.

### **Further Research and Implications**

Although this research paper has conjured a potential means of generating revenue for conservation efforts within the city of Tucson, no money was actually generated during the method's employment. Hence, evidence supporting the viability of this cuteness-centered marketing tactic when expecting a monetary transaction has yet to be generated. Not only can the feasibility of this strategy's application be tested going forward, but so too can its employment be extended to cover a wider array of niche populations so as to further substantiate Gray's postulated scales, utilizing proper and appropriate instrumentation to extrapolate its application to larger cohorts of the human population. This will also contribute more broadly to the scholarly conversation regarding the application of BAS-defined dimensions of personality on human subjects, a topic that the academic community has yet to render a consensus on (Carver and White, 1994).

## **Appendix A**

### **Survey Questions Orally received**

The following set of questions prevented verbatim as displayed to the respondents gauged the following variables: willingness-to-donate, cuteness, and familiarity:

1. To what extent are you willing to donate to this species?
  - 1.1. I do not wish to donate to this species at all
  - 1.2. I wish to donate to this species, but not a great deal of money
  - 1.3. I wish to donate a moderate sum of money to this species
  - 1.4. I wish to donate fair sum of money to this species (a bit more than average but not too great a quantity)
  - 1.5. I wish to donate a large sum of money to this species
2. How cute was the animal you witnessed on the poster?
  - 2.1. Not cute at all
  - 2.2. Slightly cute
  - 2.3. Moderately cute
  - 2.4. Cute
  - 2.5. Extremely cute
3. How familiar are you with the animal you witnessed on the poster?
  - 3.1. I have never seen nor heard of this animal before
  - 3.2. I have seen/heard of this animal, but very rarely (minimum: 1 time, maximum: 5 times)
  - 3.3. I regularly see/hear of this animal, with some exceptions
  - 3.4. I see/hear of this animal far too often

**Appendix B****Transcribed Survey Questions**

The following set of questions presented in a chart gauged the relative BAS sensitivity of the respective participant:

BAS Rewards Responsiveness	$\alpha$	M	SD	1	2	3	4	5	6
When I get something I want, I feel excited and energized									
When I'm doing well at something, I love to keep at it.									
When good things happen to me, it affects me strongly									
It would excite me to win a contest									
When I see an opportunity for something I like, I get excited right away									

**Appendix C****Notice of Informed Consent**

The following notice was delivered to all participants prior to retrieval of their data/responses so as to be compliant with all necessary ethical requirements/procedures:

The project at hand is intended for research purposes. Engagement in any of this study's procedures is completely voluntary. The purpose behind this project is as follows: "A local animal protection agency has designed a variety of posters so as to generate donations to help save endangered mammalian species native to the Sonoran Desert. This study seeks to gauge the effectiveness of these advertisements". The estimated duration for completion of this survey session is 5 minutes per person. This study entails that each participant looks at their assigned poster for an 8 second interval and promptly responds to a set of survey questions which will be collected in both oral and written fashions. The data recorded will be that relating to personality type and willingness to donate. The following foreseeable, reasonable risks or discomforts may arise: allocation of participant time, provision of personal information, and pandemic-related concerns. The following reasonable, expected benefits may result: contributing to the fields of personality research and conservation marketing. Participant anonymity will be maintained in all collected data.

If you have read, understood, and agreed to all aforementioned content please sign below:

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## **Appendix D**

### **Poster Schematic**

The images that were deemed as cuter were those depicting the American Ocelots (upper left and upper right images) and those that were deemed noncute were depicting Sonoran Pronghorns (lower left and lower right images). BAS-evoking text was displayed as "Donate *NOW!*" and BAS-mitigating text was displayed as "Please Donate".

Please Donate



Donate *NOW!*



Please Donate



Donate *NOW!*





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## Academic Paper

**Note:** Student samples are quoted verbatim and may contain spelling and grammatical errors.

**Sample: B**

**Score: 5**

This paper earns a score of 5. The topic of inquiry is focused on narrow parameters and explicit connections to relevant scholarly works as seen on page 3: “to address the question, ‘what effect do Behavioral Activation/Approach System sensitivities—the physiological mechanism believed to control appetitive motivation (Gray, 1981, 1987a, 1990)—coupled with animals’ kindchenschema cute features—prototypical cute features as established in pertinent scholarly literature (Alley 1981, 1983; Lorenz 1943)—have on Tucsonan adult hikers’ desires to charitably donate to endangered mammalian species native to Arizona?’” This is a focused research question that is carried through the professional conversation to the methods and the paper’s new understanding.

The paper also provides a logical explanation of a gap on page 7: “Research conducted by Tingting Wang, Anirban Mukhopadhyay, and Vanessa M. Patrick corroborates this hypothesis, establishing that sustainable behaviors can be induced in high BAS individuals through the viewing of kindchenschema cute organisms. However, this contention has very minimal experimental backing and has yet to be explored in relation to donation generation.” This final sentence of the excerpt punctuates the student’s ability to situate the study in a gap in the professional conversation.

Additionally, the methodological choices made are logically defended. This is discussed, for example, on pages 6, 8, and 10 with explanations of why the researcher used endangered species as opposed to flagship species, details about the population of hikers surveyed, and the use of a time constraint, respectively. For elucidation, the reference on page 10 states, “The primary purpose for the imposition of this stringent time restraint was to ensure that the participant answered impulsively (Carter and White, 1994).” The researcher presents a statistical analysis that is clearly described for the non-statistician, thus enhancing communication.

This paper does not earn a score of 4 because the new understanding is justified and the limitation of the conclusion is presented on page 17: “When measuring the willingness to engage in conservation efforts among individuals who regularly hike, the researcher is more likely to bear witness to subjects who showcase a greater affinity to environmentally beneficial endeavors.” Lastly, the implications to the community of practice are presented on pages 3-4 and then restated in the conclusions on page 17: “Not only can the feasibility of this strategy’s application be tested going forward, but so too can its employment be extended to cover a wider array of niche populations so as to further substantiate Gray’s postulated scales, utilizing proper and appropriate instrumentation to extrapolate its application to larger cohorts of the human population.”