

**Exploring the Relationship Between Culture, Personal Values, and Attention**

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**Abstract**

This study explores the relationship between an individual's cultural background and their respective personal values in regards to attention. More specifically, it aims at investigating to what degree do individuals from individualistic cultures differ in respect to collectivistic cultures with respect to their personal values hierarchy and visual attention. Previous researchers note that by examining an individual's cultural background we can then successfully predict what personal values they will prioritise (Schwartz & Bardi, 2001). This study aims at examining potential relationships between prioritising certain values and what visual stimuli individuals will be drawn to. It also explores to what extent do our personal values mediate the relationship between cultural background and visual attention? Our study consists of analysing these questions via 112 undergraduate students recruited at Royal Holloway, University of London. This study furthers prior values research outlined by Schwartz (1992) and a multitude of different cross-cultural research studies (e.g., Schwartz & Bardi, 2001); however, to our knowledge the variable of visual attention has not been previously examined among these other variables, making this study novel to the field of social psychology. Our results yield partial correlations between all variables; however, as there were no cases where all three types of variables were related to one another a mediation analysis was not needed. Further research and study replications are deemed necessary to gain a better understanding of potential correlations or mediations among the outlined variables.

*Keywords:* personal values, motivational goals, individualism, collectivism, visual attention

### Exploring the Relationship Between Culture, Personal Values, and Attention

#### **Introduction**

Within the last decade psychologists have yielded a substantial amount of research exploring the construct of personal values (Rohan, 2000). One main reason psychologists have gained such an interest in studying personal values is due to their effects on human behaviour (Roccas & Sagiv, 2010). Previous researchers have explored how values impact and shape our individual belief system; mostly, regarding what human beings believe are worthy and important in life (Roccas & Sagiv, 2010; Rohan, 2000). Likewise, researchers noted that these psychosocial processes are greatly impacted by the social and physical environment of an individual (Triandis, 2001). This finding has lead psychologist to use a cross-cultural perspective to gain a better understanding of how these personal values are developed and formed (Roccas & Sagiv, 2010; Schwartz & Bardi, 2001). With that, a handful of studies have been conducted on personal values and overt behaviour among culturally diverse sample populations (Bardi & Schwartz, 2003; Roccas & Sagiv, 2010; Schwartz & Bardi, 2001). However, current literature fails to represent how ones' cultural background impacts the development of personal values and attention. Thus, the purpose of this study is to explore how personal values can mediate the potential relation between culture and attention via visual stimuli. The following will provide the reader with a thorough understanding of personal values, such as how they are characterised and measured. It will provide substantial evidence regarding how an individual's cultural background shapes the ranking of ones' hierarchy of values, which inevitably impacts their behaviour via motivational goals. Then, it will provide an explanation of how our hypothesis is drawn from previous research conclusions represented via overt human behaviour. In total, it will explain how this

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study builds off of previous research findings in order to provide the field with novel research regarding the outlined variables of culture, values, and attention.

Personal values have been previously described as a set of abstract goals which act as guiding principles throughout an individual's life (Roccas & Sagiv, 2010; Schwartz, 1992); meaning, they ultimately assist with how an individual interacts with the world. In 1992 researcher Shalom Schwartz proposed his theory on basic personal values, which has since been successfully replicated and tested on more than 200 sample populations throughout a multitude of different countries (Roccas & Sagiv, 2010). His theory consisted of both content and structure regarding 10 different personal values which are prevalent among most cultures. Schwartz (1992) identified that these values differ in regards to the motivational goal they express: hedonism, stimulation, self-direction, achievement, power, security, conformity, tradition, universalism, and benevolence. Schwartz (1992) notes it is impossible to attain all 10 values as they are not individually compatible with one another. With that, these 10 values were further analysed and broken down by Schwartz into two basic structures among four higher order values: *openness to change against conservation* and *self-enhancement against self-transcendence* (1994). Openness to change represents the act of independent thought (self-direction), personal challenge and growth (stimulation), and ability to enjoy and indulge in life (hedonism) (Schwartz & Bardi, 2001). Schwartz (1994) states that the individual value of hedonism can be either grouped with openness to change or self-enhancement. However, in the values survey used in our study, as explained in the methods section, hedonism is marked in the category of openness to change; therefore, we too kept with this scoring (Schwartz et al., 2012). These motivational values contrast with conservation which emphasizes safety and stability within a society (security), restraint of actions or impulsivity which would violate social norms

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of ones' culture (conformity), and places emphasis on acceptance and commitment towards traditional culture and specified customs (tradition) (Schwartz & Bardi, 2001). Self-enhancement places importance on personal success and ambition (achievement) as well as personal sense of authority, social status, and prestige (power) (Schwartz & Bardi, 2001); whereas, self-transcendence coincides with staying loyal and helpful (benevolence) as well as keeping a "world-peace" mind-set (universalism) (Schwartz & Bardi, 2001). It should be duly noted, since the initial development of this theory Schwartz and colleagues (2012) have expanded from 10 to 19 motivational values under the four higher order values. Figure 1 provides an image of the revised structure. This updated version has been adopted for the present research design.

**Figure 1.** The four higher order values and their respective values and sub-values (Schwartz et. al., 2012).



Schwartz (1992) basic values theory continued to explain that that these values can be categorised into personal hierarchies, as the values differ in terms of priorities based on an individual's cultural background (Roccas & Sagiv, 2010; Schwartz, 1992). For example, previous

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findings report that individuals in western societies (e.g., United Kingdom and USA) typically rank motivational values relating to openness to change and self-enhancement higher than values representing conservation (Roccas & Sagiv, 2010; Schwartz & Bardi, 2001). While on the contrary, individuals from eastern societies (e.g., India) rank values coinciding to conservation at the top of their hierarchy (Roccas & Sagiv, 2010; Schwartz & Bardi, 2001). Furthermore, researchers explained the higher the value within the hierarchy, the higher the likelihood that an individual will act in accordance to that fundamental value (Roccas & Sagiv, 2010; Schwartz & Bardi, 2001). These findings assist with providing substantial evidence that given an individual's social and physical environment (i.e., cultural background) their behaviour will be greatly impacted, which is typically in accordance to the ranking of their personal values. This has led scientists to see some similarity within certain cultures (individualistic and collectivistic) and their respective values hierarchy (Roccas & Sagiv, 2010; Schwartz & Bardi, 2001). Characteristics associated with individualism include placing importance on personal success, valuing independent thought, and accepting confrontation. These notions are in line with Schwartz (1992) basic values theory regarding the values that represent openness to change and self-enhancement (Rhee, Uleman, & Lee, 1996; Bardi & Schwartz, 2001). Whereas, characteristics associated with collectivism include cooperation with one's in-group, restraining actions which violate social norms, and commitment to upholding traditional values, which correlate to the values representing conservation (Rhee, Uleman, & Lee, 1996). With that stated, individualism and collectivism have been the focus of cross-cultural research since Hofstede (1980) introduced them in his cultural dimension's theory, which contributes to examine how social behaviour is based off of a society's culture (Rhee, Uleman, & Lee, 1996). In sum, we can argue that with respect to the definitions and sufficient research outlined above there is a clear relationship

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between an individual's cultural background and their respective personal values. The following will review the relations of values to human behaviour, and how ones' cultural background links with these relations.

As explained above, one feature that makes personal values so intriguing to psychologists' is their impact on human behaviour (Roccas & Sagiv, 2010). For instance, personal values have been previously linked to child rearing practices (Gaunt, 2005; Roccas & Sagiv, 2010), decisions regarding consumer purchasing (Grunert & Juhl, 1995; Roccas & Sagiv, 2010), engagement with partaking in risky sexual practices (Goodwin et. al., 2002; Roccas & Sagiv, 2010), and many others. These behaviours are all classified as overt behaviours or behaviours that are externally observable. Our research is aimed at examining how values impact human behaviour from a covert perspective; specifically, examining what an individual pays attention to when prompted with a set of images. Therefore, we argue that we can take these findings to support our theories regarding values impact on behaviours which are not completely externally observable (e.g., attention). For instance, Bardi and Schwartz (2003) state that individuals act in accordance to their motivational values hierarchy in order to better attain personal goals; thus, we argue that based off these findings individuals will unknowingly direct their attention to items or images representing such goals. In simpler terms, we argue because this behaviour is happening with overt behaviour, as outlined above, it must be present among covert behaviour (e.g., visual attention).

Despite the lack of literature representing covert behaviour a few researchers have found positive correlations regarding values and personality, which could be considered as covert or overt behaviour (Roccas, Sagiv, Schwartz, & Knafo, 2002). More specifically, Roccas and colleagues (2002) examined the relationship between personality traits and participants'

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respective personal values. Their study consisted of correlating an individual's personality via the big-five factor model to Schwartz (1992) basic human values theory. The five-factor model consists of five different traits which are said to represent most personalities: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Roccas, Sagiv, Schwartz, & Knafo, 2002). In line with their hypothesis, they found correlations between agreeableness and conservation as well as with self-transcendence, openness to experience with openness to change and self-transcendence, conscientiousness with conservation and self-enhancement, and extroversion with self-enhancement and openness to change. These findings are important as they don't just represent characteristics of an individual's behaviour but give insight to internal cognitive control, which we argue is related to an individual's sense of goal directed thought (Roccas, Sagiv, Schwartz, & Knafo, 2002).

In a different article representing culture and human behaviour, Triandis (2001) outlines a theoretical framework which is directly inline with individualistic and collectivistic cultures. In simple terms, the framework explains that an individual's physical or environmental surrounding shapes their culture, which in turn has an impact on their behaviour. This framework is further broken down into *tight* and *loose* cultures. Triandis (2001) explains that in tight cultures there are clear expectations for any individual starting from a young age. For example, parents within tight cultures value child rearing practices which place importance on obedience, conformity, and security. These practices provide the child with a strict set of guidelines to follow which are deemed culturally appropriate. On the contrary, within loose cultures there is acceptance regarding deviation from the norm and individual decision making or a general sense of independence. Triandis (2001) continues to state that tight cultures are usually made up of individuals who score high on collectivism, whereas, loose cultures are typically made up of



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individuals whom score high on individualistic measures. Even though Triandis (2001) does not bring the basis of personal values into his proposed framework, the findings emphasize and exemplify the relationship between ones' environmental upbringing and its impact on human behaviour, which can be interpreted as motivational goals (i.e., not deviating from the norm within tight cultures).

As mentioned above, this study is the first of its kind to introduce the aspect of visual attention with respect to an individuals' personal values and cultural background. However, there have been previous studies which have used visual stimuli as a basis to measure attention. For example, Schmidt, Babchishin, and Lehmann (2017) used viewing time and eye-gaze as a successful measure for examining sexual interest in children among heterosexual males. The viewing time measures showed statistically significant validity, with respect to the image that the individual was looking at and discrimination of sexual offenders against children. Thus, the use of viewing time via an eye-tracker was deemed successful. With reference to this finding, we argue that by using images that represent various personal values our research will also produce significant research findings which will sufficiently represent the variable of attention.

With the evidence outlined above and a thorough explanation of potential correlations our hypothesis states, people from individualistic cultures will look longer/more often at images representing openness to change and self-enhancement, whereas, individuals from collectivistic cultures will look longer/more often at images representing conservation. We developed our hypothesis off of the research question of, can an individual's attention be mediated by their personal values based on their cultural background? The following will provide a sufficient breakdown of the current study as well as a discussion on the results, limitations, and directions for future researchers.

### **The Current Study**

This study specifically aims at collecting enough data to systematically analyse an individuals set of personal values and a potential relationship between cultural background and visual attention. In order to successfully measure this potential relationship, the participants' had to undergo a series of different tasks. First, the participant was placed in front of a computer screen and asked to look at different photos representing various value images outlined by Doring, Blauensteiner, Aryus, Drogekamp, and Bilsky (2010). After collecting the data concerning their eye gaze, via an eye-tracker, they were asked to complete a values questionnaire and a demographics survey. The values questionnaire was implemented to measure potential relationships between culture and/or visual attention. Whereas, the demographics survey was used to classify the cultural background of the individual, which was then correlated to personal values and/or visual attention. These variables were further explored by a series of different correlation matrices, which are further explained in the results section.

### **Methodology**

#### **Participants**

In total 143 individuals participated in the study (124 females, 19 males) with an age range of 18 through 32, where just over 72% of the participants were made up of 18 and 19-year-old undergraduate students. If the participant was a first year psychology student, they received partial course credit. However, if they were participating outside of course mandated credits they were entered into a prize draw for the chance to win an Amazon voucher worth 25GBP. In order to keep our results as reliable as possible it was vital the researchers cleaned the raw data set. For instance, if the eye-tracker lost track of the participant's eyes (e.g., by blinking or rapidly shifting their head) or recorded their gaze with low validity it was necessary to remove the participant, as

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the data could be faulty (Dink & Ferguson, 2020). Thus, we excluded participants whose gaze loss was greater than 25% to account for these errors during data collection (Dink & Ferguson, 2020). This left us with a total of 112 participants (98 females, 14 males). Next, we had to categorize the cultural background of the participants (individualistic, mixed, or collectivistic). Again, the age ranged from 18 through 32, where 75% were made up of 18 and 19-year-old undergraduate students. This sample population consisted of 63 individualistic participants, 14 mixed, and 35 collectivistic.

### **Value Measurement**

The revised portrait values questionnaire (PVQ-RR) was used to measure basic human values of each participant (Schwartz, 2017). The questionnaire is broken down into two versions, one with female pronouns and one with male pronouns. There are fifty-seven different prompts which consist of individuals being portrayed in terms of their own aspirations, goals, and wishes (See Appendix A). The participant is instructed to read each prompt and rate on a 6-point Likert-scale how much the person represented in the prompt relates to their own beliefs. Each prompt relates to one of the four higher order values: Openness to change, Self-Enhancement, Conservation, or Self-Transcendence. For example, the first question of the survey states, "It is important to him/her to form his views independently". The participant would then click one of the six points on the Likert-scale, ranging from "not like me at all" to "very much like me". This particular item correlates to the value of self-direction, which is categorised under the higher order value of openness to change.

Furthermore, an internal reliability test was examined among the higher order values to ensure consistency and reliability among the PVQ-RR and our sample population. Keeping with previous researchers, we noted that a Cronbach alpha value above .70 was sufficient to represent

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a strong reliability among the PVQ-RR (Scwartz et al., 2012). With that, our internal reliability check gave us the following: Openness to change .87, Self-Enhancement .83, Conservation .86, and Self-Transcendence .76. These results verified the reliability of the PVQ-RR; meaning, the results among our sample population were statistically reliable and held good consistency.

### **Culture Measurement**

We measured the individuals cultural background by collecting basic demographic information (e.g., ethnicity). Based off previous research findings, it has been noted that individuals from Western societies (e.g., United Kingdom and United States) tend to be more individualistic; whereas, individuals from Eastern societies (e.g., Asia, Africa, and Latin America) tend to be more collectivistic (Rhee, Uleman, & Lee, 1996). Therefore, having awareness of their ethnicity gives us sufficient insight to dictate the given participants cultural background. We assigned the following scores to the specified cultural backgrounds, 1 = individualistic, 2 = mixed, and 3 = collectivistic.

### **Attention Measurement**

Different photos were used to measure the variable of attention. The photos presented to the participants were first used by Doring, Blauensteiner, Aryus, Drogekamp, and Bilsky (2010) in order to assess values in children as conceptualised by Schwartz (1992,1994). The photos showed strong validity when reflections of the photos were translated back to the motivational value type via the PVQ (Doring, Blauensteiner, Aryus, Drogekamp, & Bilsky, 2010). Additionally, it should be stated that each photo represents a specific value related to Schwartz (1992) list of personal values; more specifically, there are two photos for each of the 10 values outlined by Schwartz (1992). In this study, instead of the photos being presented via self-report measures, such as with Doring and colleagues (2010), they were presented on a computer screen.

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The photos were randomly split into 4 sets of 5, in the shape of a circle, where the location of the photo was randomised each time (See Example in Appendix B). When presented with the photos, the participants were first instructed to simply look at the different images. After gazing at all 4 sets, the participants completed the task again. However, this time they were instructed to look at the photos that they liked or the photos that resonated with them the most. Whilst completing the attention task, the participants gaze was being tracked via a Tobi eye-tracker in order to see which photo(s) the participant was attending to most often or for an extended amount of time.

### **Design**

This experiment consisted of exploring if personal values mediated the relationship between culture and visual attention. We used a series of different materials such as an eye-tracker, a values self-report questionnaire, and a demographics survey. While gazing at a computer screen the participants' eyes were tracked in order to evaluate which images would catch the participant's attention. The computer screen flashed a series of multiple different photos that represented the four higher order values. The eye tracker measured the participants eye gaze pattern by the amount of time participants spent looking at a picture, which picture they first looked at, and if they went back to look at the picture again. By measuring the participants eye gaze pattern researchers could then encode any similarities between different cultures and their representative values in regards to attention. The study consisted of a dependent variable of attention, an independent variable of culture, and a mediator variable of personal values.

### **Procedure**

Participants were either recruited as a first year psychology student due to mandated credits, recruited by Royal Holloway's online website where individuals would sign up to partake

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in a multitude of different research experiments, or by word of mouth. Participants were tested on an individual basis, meaning we ran the participants' one at a time. The experiment as a whole lasted approximately twenty minutes. Upon arrival to the lab participants were instructed to read and sign the informed consent form (see Appendix C). After completion of the consent form the procedure was broken down into two phases:

1. Eye-tracking task: In order to measure attention towards visual stimuli, participants were sat approximately 15 inches (38 centimeters) in front of a computer screen, which was linked to a Tobii eye tracker. First, the participant underwent a calibration task. This consisted of fixated points on the computer screen, where the value images would appear, ensuring the participants gaze location was calibrated correctly with the eye-tracker. Next, twenty different photos each representing a different value were presented to the participant. The photos were randomly positioned in four sets of five (See Appendix B). To begin, the researcher instructed the participant to simply look at the photos on the screen. After the participant viewed the four sets they repeated the task with instruction from the researcher to look at the photos that they "liked".
2. Value and Culture questionnaires via Qualtrics: After the eye-tracking task the participants were asked to complete the PVQ-RR and the demographics survey via Qualtrics.

## Results

### Values Analysis

Before running any type of correlational matrix among the value variables we had to account for individual differences amidst our participants' responses for the PVQ-RR questionnaire. As done in similar value studies (e.g., Schwartz et al., 2012) we had to centre the

value around the personal mean. The reasoning for this is due to the fact that individuals rate the values in regards to self importance, which of course fluctuates from person to person (Schwartz et al., 2012). More specifically, individuals differ in regards to how they use the scale. (Schwartz et al., 2012). For instance, we cannot say that two individuals who rated the same value the same score actually place the same amount of importance on that specific value. Thus, we must centre the mean of the response scores so we are correctly measuring how important the value is in comparison to the other values rather than the raw score, which represented the importance of the value in regards to the person. All of the following statistical analyses have been conducted with the mean rating score for all personal values under each higher order category.

Table 1 shows the correlations between the four higher order values (N=112). As mentioned before, Schwartz (1994) noted that there are opposing values within the basic structure of the higher order value categories. Therefore, we had to verify that our correlation matrix was also negatively correlated among the pairs of values which were theoretically predicted to conflict with one another. To do this, we ran a simple Pearson's correlation among the four higher order values. Column 2 shows that there is a negative correlation between the values of openness to change and conservation (-.72). Explaining that when an individual scored higher on values representing openness to change they typically scored lower on values relating to conservation. Whereas, column 3 shows a negative correlation between self-enhancement and self-transcendence (-.54). Explaining that individuals who scored higher on values relating to self-enhancement typically scored lower on questions relating to self-transcendence. These significant negative correlations verify that the PVQ-RR was sufficient when measuring what we intended it to measure among our sample population.

**Table 1.** Matrix of correlations for all four higher order value types.

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	Openness to Change	Self- Enhancement	Conservation	Self- Transcendence
Openness to Change	-	.11	-.72**	-.03
Self- Enhancement	.11	-	-.40**	-.54**
Conservation	-.72**	-.40**	-	-.20*
Self- Transcendence	-.03	-.54**	-.20*	-

\*p<.05

\*\*p < .01

### Attention Analysis

As stated in our hypothesis, in order to measure attention via visual stimuli (i.e., value image) we would examine which photo(s) were looked at more often or for a longer amount of time. To do this, we broke up the data gathered from the eye-tracker into three separate categories, for both the like and the look data sets: fix duration, time to notice, and time to second look. Fix duration notes that an individual looked at a certain image relating to a value set longer than other images which represented different values. Time to notice represents the amount of time the individual took to notice certain images relating to a particular value. Time to second look notes how quickly the participant was to notice the image which relates to their value set for the second time. Again, the internal reliability for the visual stimuli was conducted to ensure a relationship between the set of images and the individuals priority values. We examined the internal reliability for the three higher order values analysed in this study (openness to change, self-enhancement, and conservation) with the three visual stimuli variables (fix duration, time to notice, and time to second look) for each data set (like and look). The reliabilities for the vision stimuli range from .20 to .66, representing poor consistency throughout the attention variables. Even though the internal reliability among the visual stimuli was considered poor it did generate enough of a relationship for us to examine a few underlying



relationships among culture and values. This is further explained in the following section. It should be noted the outcome of poor internal reliability is further discussed and explored in the limitations section.

### **Culture, Personal Values, and Attention Correlation**

After verifying our variables on an individual basis a simple correlation matrix was conducted between all the variables of interest. For the culture variables all participants were analysed (individualistic, mixed, and collectivistic). Only three of the four higher order levels of values were examined, openness to change, self-enhancement, and conservation. It has been noted by previous researchers that individuals from all cultures place high priority and importance for values related to self-transcendence (Roccas & Sagiv, 2010; Schwartz et al., 2001). For this reason, we opted to leave out this higher order value as it would fail to represent our proposed hypothesis. Lastly, all attention stimuli were examined in this correlation matrix (fix duration, time to notice, and time to 2nd look) for both the look and like data sets. The following is a break down of each higher order value and its respected outcomes regarding the variables of culture and attention.

**Openness to Change.** Table 2a and 2b represent all the variables of interest for the higher order value of openness to change (N=112). The main finding for table 2a indicated that individuals from individualistic cultures spent more time gazing at images representing openness to change,  $r(110) = -.22$ ,  $p = .02$ , two-tailed test. This suggests an underlying relationship between an individual's cultural background and what images catch their attention.

Table 2b indicates that if an individual was considered to be from a collectivistic background they typically took longer to notice value images which expressed openness to change,  $r(110) = .22$ ,  $p = .01$ , two-tailed test. Furthermore, the correlation suggests that

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individuals from collectivistic backgrounds take longer to notice those same images a second time,  $r(110) = .23, p = .01$ , two-tailed test. The findings represented in table 2b come from the participant being instructed to look at the images they liked. Thus, it can be interpreted that when a participant was instructed to gaze at images they like they purposely avoided images which did not represent their personal values hierarchy. These results further exemplify the foundational relationship between an individual's cultural background and their attention.

**Table 2a.** Correlation matrix representing variables of interest for openness to change and look data.

	Value	Fix Duration	Time to Notice	Time to 2nd Look	Cultural Background
Value	-	.05	.05	.05	-.00
Fix Duration	-.05	-	-.38**	-.02	-.22*
Time to Notice	-.05	-.38**	-	.58**	.10
Time to 2nd Look	.05	-.02	.58**	-	.03
Cultural Background	-.00	-.22*	.10	.03	-

\*\* $p < .01$ , \* $p < .05$

1 = individualistic, 2 = mixed, and 3 = collectivistic

**Table 2b.** Correlation matrix representing variables of interest for openness to change and like data.

	Value	Fix Duration	Time to Notice	Time to 2nd Look	Cultural Background
Value	-	.06	.02	.08	-.00
Fix Duration	.06	-	-.29**	-.15	-.13
Time to Notice	.02	-.29**	-	.49**	.26**
Time to 2nd Look	.08	-.14	.49**	-	.23*
Cultural Background	-.00	-.13	.26**	.23*	-

\*\* $p < .01$ , \* $p < .05$

1 = individualistic, 2 = mixed, and 3 = collectivistic

**Self-Enhancement.** There were no statistically significant findings for the look data representing values related to self-enhancement or ones' cultural background. However, table 3

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represents the various findings related to the like data set for the variables of interest. Two major findings were present among this correlation matrix. First, the more an individual valued self-enhancement the longer they spent gazing or looking at images which represented self-enhancement,  $r(110) = .21, p=.03$ , two-tailed test. Suggesting that when an individual is prompted to examine photos they like, they choose values that are in agreement with their motivational values hierarchy. More specifically, they choose to look at the value images that hold high priority or importance to them for a significantly longer amount of time. Second, collectivistic individuals took more time to notice the images which represented self-enhancement,  $r(110) = .22, p =.02$ , two-tailed test. This finding suggests that when individuals were prompted to examine the photos they liked, individuals from collectivistic backgrounds would avoid images that conflicted with their values hierarchy. We can interpret that these actions were executed with intent as the participant was instructed to only look at the images that resonated with them.

**Table 3.** Correlation matrix representing variables of interest for self-enhancement and like data.

	Value	Fix Duration	Time to Notice	Time to 2nd Look	Cultural Background
Value	-	.21*	.08	.02	.08
Fix Duration	.21*	-	-.30**	-.36**	.01
Time to Notice	.08	-.30**	-	.38**	.22*
Time to 2nd Look	.02	-.36**	.38**	-	.10
Cultural Background	.08	.01	.22*	.10	-

\*\* $p < .01$ , \* $p < .05$

1 = individualistic, 2 = mixed, and 3 = collectivistic

**Conservation.** When evaluating both the look and like attention data sets related to conservation there were no significant findings. Thus, we provide table 4 which presents the significant findings between cultural background and values related to conservation. These

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results can be interpreted that participants from collectivistic backgrounds rated values of conservation higher in priority than other values related to openness to change and self-enhancement via the PVQ-RR. Due to there being far less participants from collectivistic backgrounds and low internal reliability among many of the value images there is a possibility that there was not enough data to show a significant finding among the variable of attention. For this reason, researchers decided to further analyse any potential relationships between the variable of attention and culture or values among the higher order value of conservation. Thus, an exploratory analysis was conducted. To do this, researchers removed attention images which were lowest in their respective Cronbach alpha value, which increased the internal reliability of attention. After conducting the exploratory analysis, a near correlation between individuals from collectivistic cultures and gaze length among the look data set was found,  $r(110) = .18, p = .06$ , two-tailed test. Meaning, there may be a relationship between collectivistic individuals looking at images that represent values associated with conservation for a longer amount of time. This finding would be directly in line with the findings related to openness to change, adding reliability and validity to the findings for this study. Furthermore, this finding has potential to fully support the idea of personal values mediating a relationship between culture and attention. The exploratory analysis is further discussed and explored in the limitations and recommendations section.

**Table 4.** Correlation matrix representing values and culture for conservation.

	Values	Cultural Background
Values	-	.23*
Cultural Background	.23*	-

\* $p < .05$

1 = individualistic, 2 = mixed, and 3 = collectivistic

## Discussion

### **Interpretations**

The first portion of our hypothesis states, people from individualistic cultures will look longer/more often at images representing openness to change and self-enhancement. With that in mind, our results indicated that individuals from collectivistic backgrounds spent less time looking at photos which represented openness to change and self-enhancement (i.e., individualistic values). Although, this finding can be assumed from the outlined hypothesis, it cannot be directly interpreted that those of individualistic backgrounds looked at value images representing individualistic values for a longer amount of time or more often. The second portion of our hypothesis states, people from collectivistic cultures will look longer/more often at images representing conservation. As outlined in the results section, there were no significant findings among our sample population and variables of interest. This can be further explained by poor internal reliability among attention images and a small sample population concerning individuals from a collectivistic background. Even though, the results yielded partial findings for various correlations among the outlined variables we cannot state with confidence that our hypothesis was fully supported among our sample population.

When evaluating the research question which was the basis of our outlined hypothesis, can an individual's attention be mediated by their personal values based off of their cultural background? Our study held no significant findings among all the specified variables. Meaning, no mediation analysis was needed to further analyse the potential relationship among all three variables. However, our results did show significant relationships between some of the variables outlined in the correlation matrices above. Thus, we argue that a replication of this study is deemed necessary with increased diversity and a larger sample population to critically examine any potential relationships between all variables of interest.

### **Implications and Applications**

These results support existing evidence stated by Schwartz and Bardi (2001) which outline the relationship between values and cultural background; furthermore, the experiment provides new insight into the relationship between values and culture with respect to the novel variable of visual attention. These results should be taken into account when considering how this study used the aspect of ethnicity to measure the individuals cultural background. Our findings imply that based on just one feature of an individual (i.e., ethnicity) researchers can predict what an individual will prioritise when referencing certain values. Furthermore, this research can be used and emphasised among industrial and organisational psychologists' where work place productivity and well-being is of the utmost importance. As the world continues to become globally interconnected, via new technology, our work and social networks will become more culturally diverse. Thus, having a better understanding of what other individuals from various backgrounds will prioritise is important in many regards. In sum, these explanations ultimately contribute a clearer understanding of how this research relates to greater scientific literature and real world application.

### **Limitations and Future Directions**

The methodological choices were constrained by lack of perfect fit between the PVQ-RR and value images used. For instance, the images which were piloted by Doring, Blauensteiner, Aryus, Drogekamp, and Bilsky (2010) were initially matched with an older version of the PVQ. The PVQ-RR, which was used in this study, is the most current questionnaire which consists of measuring the most recent revision of individuals personal values as noted by Schwartz (2017). This revised value questionnaire also measures the values of face and humility, which are categorised under the higher order value of conservation. With that, there are no value images

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which represent those specific values. Thus, future replication studies should take this into account by either 1.) using the original PVQ initially used when piloting the original value images or 2.) pilot new images to correlate to the values of face and humility to ensure greatest internal reliability. Despite this limitation, we argue that because all the images presented to the participant were measured via the PVQ-RR the results are still valid for answering our outlined hypothesis.

The reliability of this data is impacted by a poor measurement of an individual's cultural background. This study only used the aspect of ethnicity to distinguish if the individual was from an individualistic, mixed, or collectivistic background. In order to ensure reliability among the measurement of culture a thorough questionnaire should be used. This can be further argued as life experiences impact thought processes and what one attends to in the physical world. For instance, an individual may have been born and raised in Thailand but attended an international school. Thus, their thought processes may be more individualistic. Given the current study design they would have been categorised incorrectly. Furthermore, there were fourteen participants which were classified as mixed. If a questionnaire was implemented to sufficiently classify an individual as individualistic or collectivistic there is a possibility they could actually make up one of the other categories, which would greatly increase the reliability of the study design.

As outlined in the attention analysis portion of the results section, the internal reliability measurement of attention was considered poor among our sample population. We anticipate this poor consistency to be associated with too many images and not enough time to decipher amongst the five images presented at once. Future researchers should reconsider how the images are presented to the participant. More specifically, researchers must ensure there is enough time

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to fully decipher and recognise each individual value image. For instance, researchers could only use one value image for each of the 10 values, rather than two. In fact, using the value image with the highest internal reliability would potentially yield more significant results concerning the variable of attention. On the contrary, researchers could examine the aspect of attention by presenting the images to the participant via self-report questionnaire as done by Doring and colleagues (2010). Where participants would be instructed to choose which image(s) resonate with them, ensuring that the participant was drawn to a particular set of value images rather than relying on an eye-tracker. Furthermore, and as outlined in the higher order matrix analysis, an exploratory analysis was conducted to examine potential relationships among the attention variable within the higher order value of conservation. This exploratory analysis was conducted by removing the value image with the lowest Cronbach alpha level to increase internal reliability among the variable of attention. The results concluded a near significant finding ( $p = .06$ ). With this in mind, future researchers are encouraged to pilot the variable of attention to establish stronger internal reliability measures among the value images. This is necessary to sufficiently explore if there is a significant finding, to what extent it exists, and under what conditions.

Due to the global pandemic concerning COVID-19 and conducting the study in a predominately individualistic society the generalisability of the results is limited. More specifically, due to mandated social distancing measures and government guidelines the researchers stopped collecting data two months prior than anticipated. Although, this is an unpredictable obstacle it limited the sample population by an estimated fifty participants, based off the amount of participants already scheduled to participate in the study. With respect to the cultural limitation, this was anticipated due to the cultural environment where this study took place. Both of these factors impacted the outcomes of this study substantially and need to be



thoroughly considered when interpreting the final study conclusions. Again, future studies should take into account a culturally diverse population sample and increased numbers of participants participating in the experiment to ensure generalisability.

### **Conclusion**

The findings from the current study reveal that people in collectivist cultures tended to focus on images representing actions of relaxation, achievement, and power less than images representing conformity, security, and tradition. Thus, our results suggest that differences in visual attention may be attributed to the differences in value priorities based on the individual's cultural background. More research is needed to uphold the outlined hypothesis and research question for this particular study. In conclusion, this study aimed at supporting the claim that culture greatly contributes to differences among our psychological processes and social behaviour (Betancourt & Lopez, 1993).

While the world continues to become more complex and intertwined globally, the need to gain a better understanding of culturally diverse populations continues to strengthen. As mentioned before, there is little concrete literature representing the exploration of individualistic cultures in contrast to collectivistic cultures with respect to measuring values and visual attention (Roccas & Sagiv, 2010). Therefore, our study is one of the first to contribute novel research findings concerning a specific cultural breakdown among individualistic and collectivistic cultures, personal values, and visual attention.

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**Appendix A**  
PVQ-RR Questions and Scoring  
(Schwartz, 2017; Schwartz et al., 2012)

**Instructions:**

Here we briefly describe different people. Please read each description and think about how much that person is or is not like you. Put an X in the box to the right that shows how much the person described is like you.

Not like    Not like    A little like    Moderately    Very much  
me at all    me    me    like me    Like me    like me

**Items and Dimensions (with short definitions of the dimensions)**

**Self-Direction: Freedom of thought and action**

*Autonomy of Thought: Freedom to cultivate one's own ideas*

**1** It is important to him/her to form his/her views independently.

**23** It is important to him/her to develop his/her own opinions.

**39** It is important to him/her to figure things out him/herself.

*Autonomy of Action: Freedom to determine one's own actions*

**16** It is important to him/her to make his/her own decisions about his/her life.

**30** It is important to him/her to plan his/her activities independently.

**56** It is important to him/her to be free to choose by him/herself what he does.

**Stimulation: Excitement, novelty, and change**

**10** It is important to him/her always to look for different things to do.

**28** It is important to him/her to take risks that make life exciting.

**43** It is important to him/her to have all sorts of new experiences.

**Hedonism: Pleasure or sensuous gratification**

**3** It is important to him/her to have a good time.

**36** It is important to him/her to enjoy life's pleasures.

**46** It is important to him/her to take advantage of every opportunity to have fun

**Achievement: Success according to social standards**

**17** It is important to him/her to have ambitions in life.

**32** It is important to him/her to be very successful.

**48** It is important to him/her that people recognize what he achieves.

**Power: Control over resources and people**

*Dominance over people*

**6** It is important to him/her that people do whatever he says they should.

**29** It is important to him/her to have the power to make people do what he wants.

**41** It is important to him/her to be the one who tells others what to do.

*Resources: Wealth and material resources*

**12** It is important to him/her to have the power that money can bring.

**20** It is important to him/her to be wealthy.

**44** It is important to him/her to own expensive things that show his/her wealth.

*Appendix Continues*

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### *Face: Maintaining public image*

- 9 It is important to him/her that no one should ever shame him/her.
- 24 It is important to him/her to protect his/her public image.
- 49 It is important to him/her never to be humiliated.

### *Security: Safety, stability and order*

#### *Societal: Security in the wider society*

- 2 It is important to him/her that his/her country is secure and stable.
- 35 It is important to him/her that the state is strong and can defend its citizens.
- 50 It is important to him/her that his/her country protect itself against all threats.

#### *Personal: Security of self and one's immediate environment*

- 13 It is very important to him/her to avoid disease and protect his/her health.
- 26 It is important to him/her to be personally safe and secure.
- 53 It is important to him/her to avoid anything dangerous.

### *Tradition: Maintaining and preserving cultural, family and/or religious traditions*

- 18 It is important to him/her to maintain traditional values and ways of thinking.
- 33 It is important to him/her to follow his/her family's customs or the customs of a religion.
- 40 It is important to him/her to honor the traditional practices of his/her culture.

### *Conformity: Avoidance of violating informal or formal social expectations*

#### *Rules: Compliance with rules, laws and formal obligations*

- 15 It is important to him/her never to violate rules or regulations.
- 31 It is important to him/her to follow rules even when no-one is watching.
- 42 It is important to him/her to obey all the laws.

#### *Interpersonal: Avoidance of upsetting or harming others*

- 4 It is important to him/her to avoid upsetting other people.
- 22 It is important to him/her never to annoy anyone.
- 51 It is important to him/her never to make other people angry.

### *Humility: Recognizing one's insignificance in the larger scheme of things*

- 7 It is important to him/her never to think he deserves more than other people.
- 38 It is important to him/her to be humble.
- 54 It is important to him/her to be satisfied with what he has and not ask for more.

*Appendix Continues*

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### *Benevolence: Promoting the welfare of one's in-groups*

#### *Dependability: Trustworthy and reliable*

- 19 It is important to him/her that people he knows have full confidence in him/her.
- 27 It is important to him/her to be a dependable and trustworthy friend.
- 55 It is important to him/her that all his/her friends and family can rely on him/her completely.

#### *Caring: Devotion to the needs of the in-group*

- 11 It is important to him/her to take care of people he is close to.
- 25 It is very important to him/her to help the people dear to him/her.
- 47 It is important to him/her to concern him/herself with every need of his/her dear ones.

### *Universalism: understanding, appreciation, tolerance, and protection for the welfare of all people and for nature*

#### *Concern: Equality, justice and protection for the weak in society*

- 5 *It is important to him/her that the weak and vulnerable in society be protected.*
- 37 It is important to him/her that every person in the world have equal opportunities in life.
- 52 It is important to him/her that everyone be treated justly, even people he doesn't know.

#### *Nature: Preservation of the natural environment*

- 8 It is important to him/her to care for nature.
- 21 It is important to him/her to take part in activities to defend nature.
- 45 It is important to him/her to protect the natural environment from destruction or pollution.

#### *Tolerance: Acceptance and understanding of those who differ from oneself*

- 14 It is important to him/her to be tolerant toward all kinds of people and groups.
- 34 It is important to him/her to listen to and understand people who are different from him/her.

- 
- 57 It is important to him/her to accept people even when he disagrees with them.

### Scoring Key for 19 Values in the PVQ-RR Value Scale

Self-direction Thought	1,23,39	Tradition	18,33,40
Self-direction Action	16,30,56	Conformity-Rules	15,31,42
Stimulation	10,28,43	Conformity-Interpersonal	4,22,51
Hedonism	3,36,46	Humility	7,38,54
Achievement	17,32,48	Universalism-Nature	8,21,45
Power Dominance	6,29,41	Universalism-Concern	5,37,52
Power Resources	12,20,44	Universalism-Tolerance	14,34,57
Face	9,24,49	Benevolence –Care	11,25,47
Security Personal	13,26,53	Benevolence-Dependability	19,27,55
Security Societal	2,35,50		

*Appendix Continues*

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### Scoring Key for Higher Order Values in the PVQ-RR Value Scale

Self-Transcendence	Combine means for universalism-nature, universalism-concern, universalism-tolerance, benevolence-care, and benevolence-dependability
Self-Enhancement	Combine means for achievement, power dominance and power resources
Openness to change	Combine means for self-direction thought, self-direction action, stimulation and hedonism
Conservation	Combine means for security-personal, security-societal, tradition, conformity-rules, conformity-interpersonal

Humility and Face may also be included in conservation, if no structural analysis is done to check their location in your own sample. Alternatively, they could be treated as separate values.

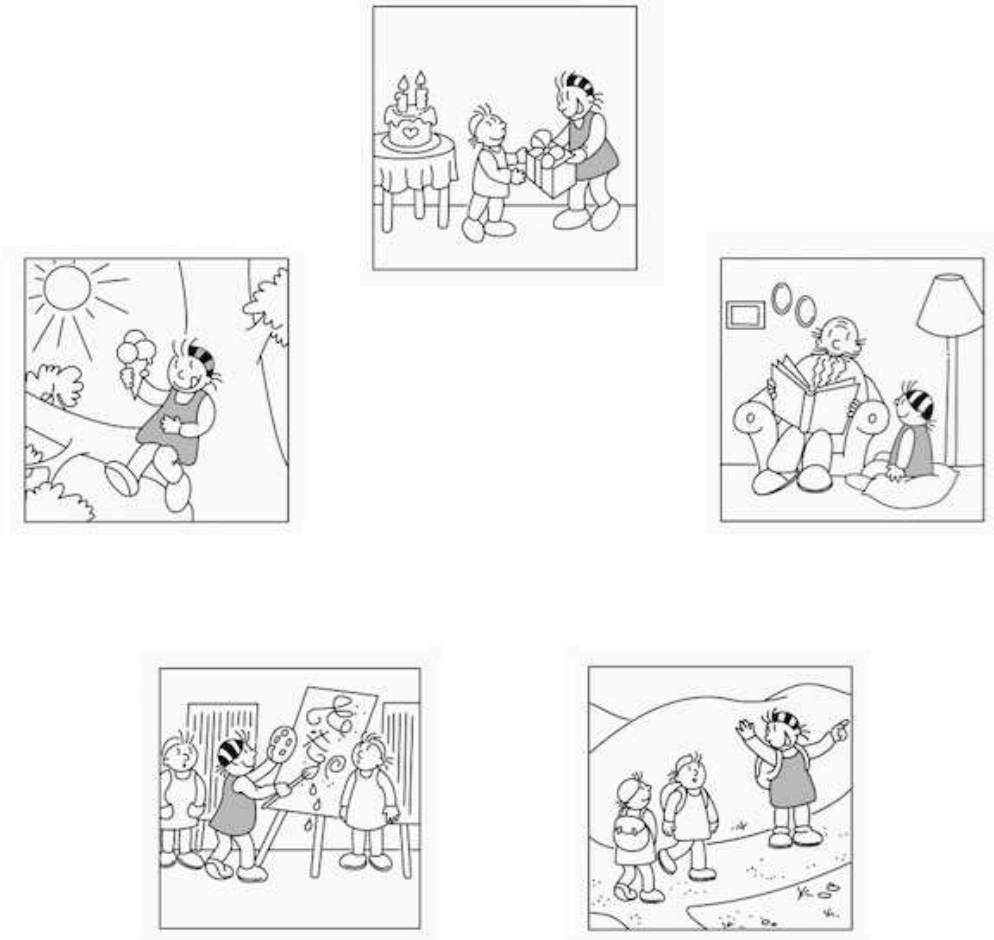


**Appendix B**  
Example of Visual Attention Stimuli for Value Images



*Appendix Continues*

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*Appendix Continues*

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*Appendix Continues*

EXPLORING CULTURE, PERSONAL VALUES, AND ATTENTION



## Appendix C Participant Consent Form

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### Information for Participants

#### **Study Title: Using an eye-tracker to see what we like to look at**

You are invited to take part in a psychological study as part of a postgraduate teaching project at Royal Holloway, University of London. Before you agree to take part, please read the following information carefully and ask the researchers if you have any questions.

#### **What is the purpose of this study?**

This study will use an eye-tracker to examine ones' gaze in regards to a variety of images.

#### **Do I have to take part?**

No. It is your choice whether you participate or not and your participation is entirely voluntary. If you do decide to take part, then you are free to withdraw from the study at any time and you do not need to give a reason.

#### **What would taking part involve?**

If you decide to take part, you will be asked to take part in the eye-tracking task in which you will be asked to look at a selection of images. Afterwards, you will complete two separate questionnaires about yourself and demographics.

#### **Are there any disadvantages or risks to taking part?**

**You will not be disadvantaged in any way for taking part in this study. There are no risks to taking part.**

#### **Are there any benefits to taking part and what will happen to the results?**

By taking part in this study you will provide valuable information that could help the researchers to gain new understanding of psychological processes. As a thanks for taking part, you will be entered into a prize draw of £25 Amazon voucher with three winners or get one credit for your time.

The results of this study will be written up in individual coursework reports and might be published later.

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### **Will my information remain confidential?**

All information that is collected during the course of the research will be anonymised and no personal details will be collected. If you wish to take part in the prize draw, we will ask you for your email address so that we can let you know in case you won. Email addresses will be stored separately to the data and there will be no way of matching an email address to the answers provided by that person.

### **Who can I contact about the study?**

If you have any questions about the study, please contact us using the details below:

Tristin Allen: [tristin.allen.2019@live.rhul.ac.uk](mailto:tristin.allen.2019@live.rhul.ac.uk)

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**The supervisor for this teaching project is Anat Bardi: [anat.bardi@rhul.ac.uk](mailto:anat.bardi@rhul.ac.uk)**

\*The participant would then click "I Agree" or "I Disagree" when prompted with "Do you agree to take part in this study?" via Qualtrics.