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Cultural Influences on Spontaneous Trait Inferences

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The human cultural jungle should be as varied and plural as the Amazonian rainforest. We are all richer for biodiversity. We may decide that a puma is worth more to us than a caterpillar, but surely we can agree that the habitat is all the better for being able to sustain each.

Stephen Fry

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And another chapter of my journey is coming to an end. Whilst it may sound stereotypical, much blood, sweat and tears were shed to get to this point. Mine own and others. To these others I will now express my thanks for all the help, comfort, and support that they have given me.

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Abstract

This work explores the effect of culture in the inference of personality traits from people's behaviours (spontaneous trait inference - STI). Specifically, it explores the effect of the individualism/collectivism cultural dimension. In Study 1 we manipulated the independent/interdependent self-construal to explore whether it would mimic the differences found between individualistic and collectivistic cultures. Study 2 explored the impact of the horizontality/verticality distinction of individualism/collectivism. Shimizu, Lee, and Uleman's (2017) adaptation of the false recognition paradigm was used in both studies to measure STIs. Despite independents making more STIs on average than interdependents, as theoretically expected, Study 1 fell short of statistical significance possibly due to having a small sample size. Study 2 was unable to find a statistically significant difference between horizontal individualists (HI) and horizontal collectivists (HC) on STI. We discuss the relevance of these null results and their implications in the context of STI differences between individualists and collectivists.

Keywords: spontaneous trait inference, false recognition paradigm, culture, individualism/collectivism

Resumo

O presente trabalho explora o efeito da cultura na inferência de traços de personalidade a partir de comportamentos (inferência espontânea de traços - STI). Especificamente, o efeito da dimensão cultural do individualismo/coletivismo. No Estudo 1 manipulou-se a independência/interdependência dos participantes para se explorar se obteria resultados similares aos encontrados entre culturas individualistas e coletivistas. O Estudo 2 explorou o impacto da distinção horizontal/vertical do individualismo/coletivismo. A adaptação de Shimizu, Lee, e Uleman (2017) do paradigma do falso reconhecimento foi usada em ambos os estudos para medir STIs. Apesar de independentes fazerem em média mais STIs do que interdependentes tal como era teoricamente esperado, o Estudo 1 não obteve significância estatística possivelmente devido à amostra ser pequena. O Estudo 2 também não encontrou diferenças significativas entre individualistas horizontais (HI) e coletivistas horizontais (HC) nas STIs. A relevância destes resultados nulos e as suas implicações para o estudo das diferenças entre individualistas e coletivistas em STIs são discutidos.

Palavras-chave: inferência espontânea de traços, paradigma do falso reconhecimento, cultura, individualismo/coletivismo

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List of Abbreviations

FAE	Fundamental attribution error
HC	Horizontal collectivism
HI	Horizontal individualism
(f)MRI	(functional) Magnetic resonance imaging
(m)PFC	(medial) Pre-frontal córtex
SSI	Spontaneous situational inference
STI	Spontaneous trait inference
STT	Spontaneous trait transference
VC	Vertical collectivism
VI	Vertical individualism

CHAPTER I: INTRODUCTION

General Introduction

I was walking outside today, it's quite a lovely day and more people like myself decided to go outside to do their chores or enjoy some sun. I saw a woman cycling in the promenade. As I saw her I started to form an impression about who she is. One will generally assume a cyclist is someone who cares about exercise and their health, sometimes we might even assume they care about the environment and, hence, their choice of transport. Their actions immediately make us create, in our minds, an idea of who they are. This woman's gender, ethnicity, and even the clothes she was wearing are also pieces of information that I extracted as I looked at her. Every time we go outside we are exposed to a gargantuan amount of information be it by observation, as in the case I just mentioned, by interacting with others, or by second hand accounts about them. This information helps us not only understand someone's actions and behaviours but also how to react accordingly. Impression formation is therefore imperative for interpersonal relations.

Asch (1946, Asch & Zukier, 1984) was one of the biggest contributors to the study of impression formation. It was him who, throughout his studies, obtained that people tend to, almost immediately, form an impression about the character of someone they are observing. These inferences frequently go beyond the information we actually have about said person (Garrido, Garcia-Marques, Jerónimo, & Ferreira, 2017). Whilst, at first, trait inferences from behaviours were believed to be deliberate processes (Jones & Davis, 1965), Winter and Uleman (1984) discovered that inferences could be formed even under memory instructions (i.e., being told to remember sentences as accurately as possible, whilst not being explicitly stated that said sentences referred to behavioural descriptions, neither having the explicit intention of forming an impression about the person nor of inferring traits), thus being made without the person's intention of doing so, and also, with the person being unaware of the process (i.e., participants subsequently denied using trait inferences as a mnemonic strategy). That is, that trait inferences could be spontaneous (Winter & Uleman, 1984).

Explicitly, spontaneous trait inference (STI) is when an observer makes assumptions about an individual's stable personality characteristics without intending to do so or being aware of it (Newman & Uleman, 1989). When an observer is exposed to a situation which implies someone has a certain personality trait, they can correctly identify said trait despite doing so unintentionally and unconsciously (Brown & Bassili, 2002; Uleman, Newman, & Moskowitz, 1996; Wigboldus, Dijksterhuis, & Van Knippenberg, 2003).

However, there is an interesting aspect to social cognition and, consequently, STIs: The effect that culture might have in how we perceive and process information. Whilst most research tends to be anglo-centric and often assumes its results are universal, work by researchers such as Markus and Kitayama (1991) has found that culture influences social cognition. In particular, they found that the fundamental attribution error (FAE) which was once thought to be universal, was a by-product of individualistic cultures such as the American. FAE occurs when an observer faced with an ambiguous situation will rather believe that the actor did something due to their personal characteristics, dispositional inference, rather than due to the environment they were in, situational inference (Ross, 1977; Markus & Kitayama, 1991). Nevertheless, unlike STIs, this process is neither spontaneous nor unconscious, so it cannot be automatically assumed that culture will affect STIs in a similar fashion (Saribay, Rim, & Uleman, 2012; Zárate, Uleman, & Voils, 2001). One may thus ask how culture influences STI, a process that takes place spontaneously and outside conscience. Specifically, could a manipulation of independent versus interdependent self-construal result in differences in STI? And what about the horizontal/vertical distinction of individualism/collectivism? Could they influence the extent of STI? These are the questions that the present study addresses towards a better understanding of the interaction between culture and social cognition.

Without further ado, I will now better define what are STIs, how they have been researched, and some other important aspects about what they are. After that, I will provide a brief overview of what is culture and how it has been researched, particularly on the dimension of individualism/collectivism. To finish this section, I will review the research connecting the cultural dimension of individualism/collectivism to STIs and explain the current proposal.

1.1. Spontaneous Trait Inference: What exactly is it and how does it work?

As previously mentioned, STI occurs when someone unintentionally, and without being aware they are doing so, assumes another has a certain personality trait based on what they observed (Newman & Uleman, 1989). The observer is, in fact, capable of, almost automatically, infer personality traits when exposed to another's behaviour which implies those traits, despite being unconscious they were doing so and it being unintentional (Winter & Uleman, 1984; Winter, Uleman, & Cunniff, 1985). Some authors also defend another characteristic of STIs: that they are effortless (Fiedler, 2007).

It was Winter and Uleman (1984) that managed to show that trait inferences did occur spontaneously. Previously to that, despite Asch's (1946) belief that trait inferences could be spontaneous, there had been a change towards perceiving the process of inferring traits from behaviour to be conscious, arduous, and active as per causal attribution theory (Heider, 1958; Schneider, Hastorf, & Ellsworth, 1979). To prove trait inferences could be spontaneous, the authors adapted Tulving's encoding specificity paradigm (Tulving & Thomson, 1973), a memory paradigm, to the study of STIs. In its original state, this paradigm proposes that, in a memory task, if two items are coded at the same time, the recollection of one of them can be facilitated by displaying the other as a cue (Ferreira, Garcia-Marques, Garrido, & Jerónimo, 2017). Similarly, Winter and Uleman (1984) proposed that, under memory instructions, participants exposed to sentences which had implicit traits (e.g., "The pianist leaves her purse on the subway seat") would better remember the sentence when they were shown the implied trait (e.g., absent-minded) versus a free recollection task. They also showed that the implied traits were as good as words that were semantically related to the content of the sentence (e.g., music) in helping the participants remember. As the traits were useful cues to remember the sentences despite their inference not being required to the task at hand this suggested to the authors that the participants had spontaneously inferred them. This was subsequently confirmed by interviewing the participants which not only denied using traits as a mnemonic strategy but were also surprised at their acuity when the trait was the cue (Winter & Uleman, 1984).

However, some authors questioned whether the used methodology was adequate to actually show that there was such a thing as STIs. Thus, Winter, Uleman, and Cunniff (1985) decided to repeat the study whilst using the guise of it being number memorization study with a "filler task". This "filler task" consisted on reading aloud a trait implying sentence about which the participants were made to answer a surprise question later on. This was similar to what they had done in 1984 (i.e., they were shown a trait or a word semantically related to the content, or nothing at all). This ensured that, not only, participants thought that remembering the sentences, and inferring traits from them, was not necessary to the task at hand, as well as the fact that it would be competing with the number memorization task for cognitive resources. The experiment replicated the previous results and, once again, showed that using traits as cues produced consistent positive results when recalling the sentences. Even so, that was not enough as some authors suggested that the findings could have resulted not from making STIs during the encoding of the sentences but could be the result of cognitive processes during the retrieval. That, when faced with a trait word, they would start thinking

about behaviours related to said trait and that these behaviours would then remember them of the sentence and not the trait itself. Another objection was due to the fact that Winter, Uleman, and Cunniff (1985) didn't verify whether the number memorization task was actually reducing the participants' cognitive resources (Carlston & Skowronski, 1994; Ferreira et al., 2017).

Hence, in 1992, Uleman, Newman, and Winter repeated the 1985 study adding yet another level of cognitive overload and now measured it. However, this study proved that STIs actually need some cognitive resources at encoding and the more cognitive resources available then, the more traits are spontaneously inferred. This means that whilst the authors found STI are not quite automatic, they do occur during encoding. Further studies have corroborated this and found that, for instance, when memorizing the sentences whilst being asked to disregard their meaning, STIs were reduced but not completely eliminated (Uleman & Moskowitz, 1994). Todorov and Uleman (2002; 2003; 2004) took it even further and used more extreme conditions to test the automaticity of STIs, such as using a set of 120 photo-behaviour pairs (Study 5, Todorov & Uleman, 2002), showing the behaviours for only 2s (Study 1, Todorov & Uleman, 2003), when the processing of information was shallow due to asking participants to count the nouns in the sentences (Study 2, Todorov & Uleman, 2003), when rehearsing a 6-digit number during exposure (Study 3, Todorov & Uleman, 2003), and even when there were 60 pairs each with two photos, an actor and a control, and a behaviour (Study 2, Todorov & Uleman, 2004). The fact that STIs remained significant further corroborated they are mostly automatic and require very little cognitive resources. Furthermore, Todorov and Uleman (2002) also provided evidence that the traits were being bound to the actors' faces. That is, that traits were getting linked to the actors in long-term memory.

To summarize, these studies did show that whilst STIs can be considered spontaneous and automatic as far as being made unconsciously and without the subject intending to, they are not spontaneous in the regard that they do need some cognitive resources to occur.

Whilst I have previously mostly focused on the work by Winter and Uleman (1984; Winter, Uleman, & Cunniff, 1985; Uleman, Newman, & Winter, 1992) and their use of cued-recall to study STIs, there are three other paradigms used to study STIs. Explicitly, savings in relearning, recognition probe, and false recognition (Ramos, Orghian, & Garcia-Marques, 2012). Whilst cued recall was the first paradigm used, others were developed to address criticisms and questions about the nature of STIs (Uleman, Blader, & Todorov. 2005). Savings-in-relearning was developed to address the controversy about whether STIs were

about the actor or mere categorizations of the behaviour, whilst false recognition further proved this by using photographs, and recognition probe to show STIs are unintentional (Uleman, Blader, & Todorov, 2005).

The paradigm of savings in relearning was proposed by Carlston and Skowronski (1994) and based on Ebbinghaus' (1885) memory studies which have shown us that once we memorize something, if we are exposed to it once more then we shall take less time to relearn it. Thus, the authors proposed that when participants read actor-sentence pairs and are then asked to memorize pairs of the actors with the previously implied traits, then they will have an easier time remembering the traits later when they are shown the actors. This was corroborated by their results which showed that when the traits were correctly paired with actors (i.e., the traits presented in the learning task were the ones implied in the sentences during the exposure task) the participants had an easier time recalling the trait when asked, versus when the traits shown were not the ones implied in the sentences (i.e., mismatch). This was true under both memory and impression formation instructions and, in fact, there were no statistical differences between the two conditions. The effect also appeared to be long-lasting as the authors had studies (Studies 3-5 in the article) in which there had been time intervals (from 2 to 7 days) between exposure and learning tasks and whilst the delay did weaken the savings effect it nonetheless remained significant (Carlston & Skowronski, 1994). Finally, as the participants were unable to correctly recognize the sentences from which they inferred the traits this indicates that the implicit inferential actor-trait connection does not depend on conscious information recovery processes (Ferreira et al., 2017).

It was Uleman, Hon, Roman and Moskowitz (1996) who applied the recognition probe paradigm from text comprehension (Mckoon & Ratcliff, 1986) to the study of STIs. This paradigm consists in showing participants a sentence which either implies a trait (e.g., "She asked how the swallows find their way north each year." implying "curious") or a control sentence (e.g., "They asked her to find the swallows every year.") and immediately afterwards asking whether the trait (e.g., curious) was present in said sentence. Even when the sentence implied the trait, the correct answer would still be "No" as the trait was implied but not present. Therefore, more mistakes (i.e., picking "Yes") and longer response times would indicate STIs for, if the trait was indeed inferred, it would be readily available in memory. The results ended up proving just that, that when the sentences implied traits participants took longer to answer and made more mistakes in comparison to those that didn't imply traits which means STIs were detrimental to the participants' task performance. Thus, this paradigm

further corroborated that STIs are unintentional and occur during encoding (Orghian, Ramos, Rato, Nunes, & Garcia-Marques, 2014).

Finally, the false recognition paradigm was developed by Todorov and Uleman (2002). This paradigm was created to enlighten whether STIs referred to the actor of the behaviour or if they were mere categorizations of the behaviour itself. To this end, the authors paired pictures of individuals with sentences during exposure. These sentences described behaviours that could imply traits (e.g., "He threatened to hit her unless she took back what she said.") or have them stated explicitly (e.g., "Andrew was so aggressive that he threatened to hit her unless she took back what she said. Then in the recognition phase participants were faced with the photos once more and were asked whether a certain trait was in the sentence that had accompanied the photo during exposure. For the sentences that implied traits, half of the photos were matched with the trait the corresponding behaviour implied but half had been matched with traits from other photo-behaviour pairs. Whilst the correct answers for all the implied traits would be that the traits were in fact not in the sentences, the participants made more mistakes and took longer to provide an answer when the trait had been implied by the behaviour associated with that specific photo due to source-monitoring failure (Johnson, Hashtroudi, & Lindsay, 1993). That is due to the fact that, when recalling past memories, there is no information about their source or origin and, therefore, it falls to the subject to make a decision about their origin (Johnson, et al., 1993). The more semantic similarity between internal and external sources of information about a memory, the hardest it is to identify its source (Ferreira et al., 2017). So, it falls to the subject to make a decision whether Andrew is aggressive because they have been told so, or if they inferred it because he threatened to hit a woman. The authors even took it further and showed that STIs still occur when the participants are faced with 120 face-behaviour pairs, have very little time to read the behaviour descriptions (2 seconds), when they process them on a superficial way by being asked to count the nouns in the sentences, and even in cognitive load by being asked to rehearse and remember a 6-digit number whilst reading the behaviour descriptions (Todorov & Uleman, 2002; 2003).

The discovery of Spontaneous Trait Transference (STT), that is, a phenomenon in which the observer attributes the actor's traits to another person, or even objects and animals, simply because they were present at the time (Brown & Bassili, 2002), ended up questioning to what exactly do STIs refer to, whether the trait was merely associated to the actor or if it was perceived as an actual characteristic of said actor (Crawford, Skowronski, & Stiff, 2007). Carlston, Skowronsky, and Sparks (1995) discovered STTs by changing the savings-in-

relearning paradigm to instruct participants that the people in the photographs were informants and not the actors of the behaviours described in the sentences. These informants were, in fact, describing someone they were acquainted with (Study 4). Under these conditions, the authors found that the inferred trait would get associated to the communicator, thus, there had been a transference of the traits from the actor to the communicator - the STT. Another variation of the savings-in-relearning paradigm was used to better test STTs. In this variation the participants were informed that the photo-behaviour pairs had been random and, thus, the behaviours and traits were not about the person in the photograph (Skowronski, Carlston, Mae, & Crawford, 1998, Study 3). Nevertheless, STTs persisted. This led Skowronski and colleagues to propose that the association between the inferred trait and the communicator was a mere associative process as it eliminated the possibility that participants were assuming the communicator and actor were similar due to being acquaintances, or that the communicator was endorsing the described traits. The phenomenon of STT was even explored further and it was shown that the traits could be transferred to objects and even from dogs to people (Brown & Bassili, 2002; Mae, McMorris, & Hendry, 2004).

Notwithstanding, when comparing STTs and STIs, the evidence has rather consistently shown that STIs are stronger than STTs (Brown & Bassili, 2002; Crawford, Skowronski, & Stiff, 2007; Skowronski et al., 1998) which lead to the idea that whilst STTs are only associative processes, STIs are truly dispositional inferences. To this end, Todorov and Uleman (2004) edited the false recognition paradigm to study STIs and STTs. To differentiate between them, the authors modified the paradigm to show two faces paired with the behaviours and identifying one of the faces as the actor and the other face as control. The participants were later on asked the same: if the trait had been in the sentence paired with the photo, except now the photo could have been of the one identified as the actor during exposure or could be the control face. They obtained that when one is clearly identified as the actor participants made more mistakes in saying the trait was in the sentence when it was only implied, as compared to the trials in which the traits were paired with the control faces. Thus, implicit and explicit attributes reference actors and are encoded as part of the actor's representation (Todorov & Uleman, 2004). This corroborates that STIs are not mere associative processes but are real inferences as they also involve spontaneous attributional processes (Ferreira et al., 2017).

Furthermore, Carlston and Skowronski (2005), using the savings-in-relearning paradigm, showed that when forcing participants to remember who the target of the informant's descriptions was before making trait judgements, STTs were eliminated whilst

STIs were enhanced. This supports the hypothesis that whilst STT results from incidental associative processes, STI results from explicit inferential processes (Carlston & Skowronski, 2005). Plainly, whereas in STT we assume that a certain trait is associated to a certain bystander, in STI we assume the trait is the property of the actor (Carlston & Skowronski, 2005).

Finally, another matter of contention within the study of STIs was when does it happen and how does it fit into the current attribution theories as the classical model wasn't able to accommodate STIs (Ferreira et al., 2007). Thus, a new model was necessary to integrate all the attained knowledge on trait inferences. Gilbert, Pelham, and Krull (1988) proposed a three-step model in which the observer first categorizes the behaviour ("what is the actor doing?"), followed by characterization of the person ("what trait does the action imply?", and finally, correction ("what situational constraints may have caused the action?"). Whilst the first two steps are mostly automatic, such is not the case for correction which is a more active process and, therefore, more easily affected by the cognitive load. Even so, whilst this model fit the automaticity of STI, it still doesn't quite suit STI as it focuses in situations in which the perceivers are forming impressions and therefore any resulting trait inferences are not spontaneous (Uleman et al., 1996).

Whilst much has been learned about STI, there is much yet to learn, and the debate surrounding their exact nature rages on (Uleman, Rim, Saribay, & Kressel, 2012; Uleman & Kressel, 2013).

1.2. Culture: Individualism and Collectivism

As previously mentioned, the effect of culture on social cognition has long been subject of research, particularly after certain phenomena that were once thought to be universal having been found to be rather culture-specific such as the FAE (Markus & Kitayama, 1991).

Culture is the essence of what makes us human. It is a system based on information, including shared understandings and ways of doing things, that enables people to live together in an organized manner and get their needs met (Baumeister & Buschman, 2013). To be culture it also must be transmitted between people through memes, maintaining it through generations and over time (Kashima, 2007). Explicitly, culture can be defined as a functional yet loosely organized network of knowledge structures, which include procedural and declarative knowledge, shared by a group of people and exhibited in communal forms and

practices, that is passed down through generations, shows a great deal of continuity but is, nevertheless, adaptive and dynamic, for the people within said culture create and shape it (Chiu, Ng, & Au, 2013). Culture can be divided into three layers. The outer layer which are the explicit cultural products such as language, food, and other observable items. Then there is the middle layer which are the norms and values, that is, their shared sense of what is "right" and "wrong", and what determines what is "good" and "bad" And, finally, the core layer which are the assumptions about existence (Trompenaars & Hampden-Turner, 1993). According to Trompenaars and Hampden-Turner (1993) it is imperative to understand this core layer for the successful understanding and study of cultures.

Cultural psychology emerged from the idea that the identities of people and their sociocultural environment are interdependent (Shweder, 1990; Shweder & Sullivan, 1993). That is, that individuals and culture shape one another and that cultural differences can manifest, regulate, change, and transform people's psyche despite it being governed by general principles (Shweder, 1990; Shweder & Sullivan, 1993; Fiske, Kitayama, Markus, & Nisbett, 1998). Furthermore, neuroplasticity, that is, the changes to the brain that happen as a result of the interaction between people and environment, corroborates this (Shaw & McEachern, 2001; Heine, 2012). Let's consider a classic example of neuroplasticity: that of taxi drivers in London. They were shown to have unusually large hippocampi in comparison to other people, and the longer a person had been a taxi driver, the larger their posterior hippocampus (Maguire et al., 2000). This is attributed to the fact that the drivers create mental maps throughout the years to figure out what is the best/quickest path for their passengers, with the posterior region of the hippocampus aiding spatial memory in navigation (Maguire et al., 2000). Then what about culture? As it is ubiquitous in our lives, we are immersed in it from the very moment we are born, it follows that culture will influence our brain and cognition somewhat. For instance, Boroditsky (2001) explored differences in the concept of time between Mandarin and English speakers. Language is on itself a cultural product after all. She obtained that due to repeated use of vertical (more common in Mandarin) or horizontal (more common in English) metaphors when talking about time, Mandarin speakers perceive time as being vertical whereas English speakers perceive it as horizontal. To explore how culture influences the brain and psyche it is pertinent to discuss the cultural dimension of individualism/collectivism, as much of it appears to be due to this particular cultural dimension (Stevenson, 2010).

Individualism/collectivism is one of the most studied and widely accepted cultural dimensions (Stevenson, 2010). It refers to how much a culture endorses feelings of

uniqueness and autonomy for their members or, conversely, their group belonging (Stevenson, 2010). This is reflected on culturally accepted norms and behaviours, for instance, in individualistic cultures, young adults are encouraged to leave their parents' house, and there is a focus on meritocracy. Collectivistic cultures on the other hand tend to consider the years someone has been with the company when deciding their pay, and children are often expected to look after their parents in old age (Heine, 2012). I will now define what exactly is individualism and collectivism, some of the main controversies and divergences in their definition and research.

Individualism can be broadly described as a social orientation in which the well-being of the individual is prioritized, whilst in collectivism it is that of the collective. These orientations represent two fundamentally human motivations: that of "getting ahead" and "getting along" (Oishi & Su, 2007). Broadly, individualism refers to a loosely-knit society, namely, where one is only expected to take care of themselves and their immediate family. On the other hand, collectivism denotes a tightly-knit society where one can expect not only their relatives, but also in-group members, to look after them and in turn shows them loyalty. A person from an individualist culture will then focus on "I", what sets them apart from others, whilst one from a collectivistic culture will focus on "we", what they have in common (Hofstede, 2001; Hofstede, Hofstede, & Minkov, 2010). Notwithstanding, in collectivism, there is more resistance and even hostility towards outgroup members in comparison to individualism. Thus, individualism and collectivism are considered adaptive approaches to intra- and intergroup conditions (Oishi & Su, 2007).

Nevertheless, some authors criticize such a linear definition of the individualism/collectivism duality. They state that there is a horizontal and vertical distinction within them in which horizontal stands for equality being valued, and vertical for hierarchy being emphasized (Singelis, Triandis, Bhawuk, & Gelfand, 1995). These distinctions are partially due to historical context. For instance, vertical-collectivism is prominent in East-Asia where Confucianism was widely spread. In Confucianism, there is a focus on knowing one's role, duties and showing deference to authority (Oishi & Su, 2007). Hence, whilst Japan is considered vertical-collectivist (VC), the US shows a vertical-individualist (VI) context (Shavitt, Torelli, & Riemer, 2011). On the other hand, whilst Scandinavian countries show a horizontal-individualist (HI) cultural orientation (Shavitt et al., 2011) Portugal is considered horizontal-collectivist (HC; García & Garcia, 2014; Azevedo Nogueira, 2012; Rodrigues, Veiga, Fuentes, & García, 2013). Still, cultures are not pure, and individuals can exhibit each of the four cultural patterns at different times and situations (Singelis et al., 1995).

Shavitt and associates (2011; Shavitt, Lalwani, Zhang, & Torelli, 2006) warn of the danger of neglecting the horizontality/verticality of individualism/collectivism when conducting cross-cultural studies. The authors note that there are differences between people high on VI and low on VI in information processing. In fact, using horizontal and vertical distinctions of individualism/collectivism is very promising in various areas of psychology. For instance, cross-cultural developmental psychology found that the optimal parenting style depends on the cultural orientation (i.e., individualistic cultures in general do better with the authoritative parenting style, whilst for HC it's the permissive, and for VC the authoritarian; García & Garcia, 2014; Rodrigues et al., 2013) whilst in consumer psychology, a preference for one's national products appears to be due to verticality, in particular VC, and not individualism/collectivism on its own (Shavitt, Lalwani, et al., 2006).

Other authors, suggest even another individualism/collectivism model, one that instead of being split in HI/HC/VI/VC would instead be split as tight/loose individualism/collectivism in which tighteness is defined by the strength and clarity of social norms and of sanctions (Gelfand, Nishii, & Raver, 2006; Gelfand et al., 2011; Sullivan, 2016). This model is believed to have a high predictive power, but more research is yet necessary to substantiate this (Sullivan, 2016).

So how does culture influence cognition? Well, one of the ways culture influences cognition is in the observed systemic cultural variations in thinking styles. Those from individualistic cultures show an analytic thinking style, whereas those from collectivistic ones show holistic thinking styles, meaning that individualists focus on the central object whereas collectivists give their attention to both target and background (Butchell & Norenzayan, 2009; Gutchess et al., 2006; Heine, 2012; Lee et al., 2017; Zhu et al., 2007). Another study found that whilst executing a figure lining task, Americans show better accuracy in the absolute task whilst Japanese were more accurate in the relative task. Explicitly, that when asked to copy a line to a square and draw it the same size as in the original square (which would be a 30mm line) Americans did the task with more accuracy, whilst when asked to draw it proportionally to the square they were copying it to (which would be 1/3rd of the square's length) Japanese fared better (Kitayama, Duffy, Kawamura, & Larsen, 2003). The authors of this study also found that Japanese-Americans and Americans in Japan had results that were closer to those of people from their host countries rather than their countries of origin. Another study by Gutchess, Welsh, Boduroğlu, and Park's (2006), using fMRI to compare Americans to East Asians watching pictures of objects, backgrounds, or combined pictures (objects plus backgrounds); found Americans to show more activation of brain regions implicated in object

processing. According to the authors, the results suggest that culture, and having either a holistic or analytic thinking style, directs neural activity during scene encoding.

Moreover, culture also effects cognition as explained by social orientation theory. Individuals with an independent view of the self, common in more individualistic cultures, see themselves as someone whose behaviour is primarily due to internal attributes such as traits. On the other hand, those with an interdependent self, common in more collectivistic cultures, perceive behaviour as resulting from contextual factors (Markus & Kitayama, 1991; Lee, Shimizu, Masuda, & Uleman, 2017). Also, Chinese people, which are considered collectivistic, have been found, using functional magnetic resonance imaging – fMRI, to show activation of their medial prefrontal cortex (mPFC) when they are asked whether an adjective (e.g., brave) describes their mother (Zhu, Zhang, Fan, & Han, 2007). The same was not true for the Western participants which are individualists. As the mPFC is implicated in processing information about the self, the study corroborates the distinction between individualists and collectivists in having an independent or interdependent view of the self respectively (Zhu, et al., 2007).

When considering the horizontal/vertical distinction of individualism/collectivism researchers propose other distinctions in the self-construal. According to Singelis and associates (1995) HI reflects an interdependent/same self-construal which means people see themselves as independent from one another yet more or less equal in status. In the same way HC shows an interdependent/same self-construal, that is that people perceive themselves in relation to their ingroup and everyone in the ingroup as having a mostly equal status. On the other hand, VI cultures show an independent/different self-construal, that is, people perceive themselves as independent and unequal. Finally, in HI people view themselves as interdependent and unequal (Singelis et al., 1995).

Because of these differences in self-construal between cultures, some authors opt for to manipulate the self-construal of individuals to study the effects of individualism/collectivism. This is done by priming independence/interdependence (Brewer & Gardner, 1996; Lopes, Vala, & Oberlé, 2017; Ybarra & Trafimow, 1998). This manipulation has the advantage of making the studies purely experimental, instead of the regular quasi-experimental cross-cultural studies, and avoids the issue/criticism of cross-cultural studies disregarding individual variations and thus making it unclear what are the exact cultural factors responsible for any differences they find (Heine, 2012; Saribay, et al., 2012; Stevenson, 2010; Oyserman & Lee, 2008). This priming also avoids the issue of natural differences between individuals being correlated with or even confounded by other variables

(Oyserman & Lee, 2008). Additionally, this manipulation has been shown to attain consistent results with what is seen in "natural" individualism/collectivism (Brewer & Gardner, 1996; Lopes, et al., 2017). Lopes and collaborators (2017) found that when manipulating independence/interdependence it resulted in individualists attributing more validity to group consensus when the group is composed of heterogenous people. The authors argue that this happens because individualists tend to focus more on the people that make up a group, and if people are heterogenous, then they assume that there is less likely to be a bias when they achieve a consensus. For collectivists, as they disregard personal differences by focusing on situational cues, there is no discrimination between heterogenous and homogenous groups when attributing validity to their respective consensus (Lopes, et al., 2017). Indeed, this is coherent with the findings that those with an independent self-construal prefer information from diverse groups (Oyserman, Coon, & Kemmelmeier, 2002). Thus, priming certain aspects of the self, in this case independence/interdependence, impacts information processing (Lopes et al., 2017; Ybarra & Trafimow, 1998).

Lastly, there have been studies connecting horizontality/verticality to mindset differences. For instance, recent studies in creativity have shown that horizontality/verticality was related to one having more of a growth or fixed mindset (Karwowski & Brzeski, 2017; Karwowski & Tang, 2016; Tang, Werner, & Karwowski, 2016). Individuals with a fixed mindset perceive personal characteristics, such as traits, as something static. Conversely, individuals with a growth mindset will view personal characteristics as something that can be worked on and improved (Dweck, 2006). As those who ascribe to a more fixed mindset tend to view failure as lacking, for instance, if one fails an intelligence test they are likely to view the person as lacking intelligence whilst those who view intelligence as incremental (i.e., those with a growth mindset) may view failure as irrelevant (Kruglanski & Sleeth-Keppler, 2007). In their creativity studies, Karwowski and associates have found that horizontality was correlated with a growth mindset whilst VI in particular was strongly correlated with a fixed mindset (Karwowski & Brzeski, 2017; Karwowski & Tang, 2016; Tang, Werner, & Karwowski, 2016).

This is similar to the findings by Shavitt and associates (2011) connecting individuals high on VI and having a stereotyping mindset. Explicitly, the authors found that high-VI resulted in people attending more to information congruent with their initial expectations about another person and that this process was largely automatized due to its constant use and routinization (Goodwin, Gubin, Fiske, & Yzerbyt, 2000; Shavitt, et al., 2011). In contrast, high-HC showed an individuating mindset, that is, paying more attention to incongruent

information, which in turn results in them creating a more accurate image of other people (Shavitt et al., 2011). The authors also suggest that high-HI people are unlikely to use a stereotyping mindset; whereas high-VC use both stereotyping and individuating mindsets depending on whether they are dealing with outgroup members, in which case they use a stereotyping mindset, or ingroup members, in which case they use an individuating mindset (Shavitt et al., 2011).

With these thoughts it is now pertinent to focus on how individualism/collectivism influences STI for that is the subject of this work.

1.3. Culture and STI: Their relation and the current proposal

So how does culture influence STI, which is a (mostly) automatic, and unintentional process as we have previously discussed? Apparently, culture influences STIs in a similar way to how it influences the FAE, that is, individualists make more STIs than collectivists[1] (Duff & Newman, 1997; Lee et al., 2017; Na & Kitayama, 2011; Newman, 1993; Shimizu, Lee, & Uleman, 2017; Zárate, et al., 2001).

The study of cultural influences on STI was started by Newman (1993) who used an idiocentrism scale to measure individualism/collectivism at the individual level and then used the cued-recall paradigm to measure STIs. The author obtained that individuals with higher scores on the idiocentrism scale were more likely to spontaneously infer traits from behaviours. He also found that male participants reported higher idiocentrism than female participants, and in his Study 1 the correlation of idiocentrism with STI was only significant for men. This is never fully explained and whilst it is true that, on average, men are more idiocentric than women, the differences between men and women in Study 1 were marginal and statistically insignificant. Furthermore, in Study 2 subjects higher in idiocentrism made more STIs regardless of gender. The only apparent difference was that Study 2 used single-sentence and multi-sentence stimuli (1-3 sentences per behavioural description), whilst Study 1 only used single-sentence stimuli. It is somewhat unclear how this translates in the observed differences. Could women, despite their values in the idiocentrism scale, be more likely to consider possible situational factors unless there is more information pointing towards the

[1] In fact, it has been proposed that STIs provide a theoretical model capable of explaining the FAE and even the perseverance effect (i.e. clinging to hasty inferences even after they have been shown to be wrong; Fiedler, 2007).

subject having a certain trait? This is a possible explanation considering Choi, Nisbett, and Norenzayan's (1999) proposal that collectivistic/allocentric people don't necessarily make less use of traits to explain or describe behaviours but that they are just more sensible than idiocentric people to situational causes. And whilst Newman (1993) didn't find statistically significant differences between women and men in idiocentrism, such differences had been previously found by Triandis (1990). Furthermore, as Newman (1993) points out, the scale he used might be less accurate for women as 63% of the subjects used in its development were men (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). It may also be because the idiocentrism scale does not discriminate between horizontality and verticality. When that is accounted for men consistently score higher in VI than women (Shavitt et al., 2011) and, considering the mindset differences we previously discussed, it is possible that only VI results in more STIs.

To study whether this correlation was just between idiocentrism and STI or if idiocentrism was correlated with spontaneous inferences in general, and, also, if the automatization of trait-inference procedure is a characteristic particular to individuals high in idiocentrism, Duff and Newman (1997) created 2 new studies also using cued-recall. Study 1 now used ambiguous sentences that could be interpreted as implying actor traits or just situational causes (e.g., "On the designated day, the electrician is given a raise by his company"), then either the trait (e.g., "hardworking") or situational cause (e.g., "standard policy") were used as recall cues. The authors found a correlation between idiocentrism and STI, but this was not the case for inferring situational causes for behaviours (spontaneous situational inferences - SSI). Thus, idiocentrism is specifically correlated with STIs and not spontaneous inferences in general. Study 2 had participants solve a "word comprehension task" prior to the cued-recall. The two tasks were presented as unrelated. Unbeknownst to the participants, this "word comprehension task" was actually priming certain traits that were used in the cued-recall paradigm. As the trait-priming only aided trait-cued recall for those already high on idiocentrism, it appears that only they have automatized STIs (Duff & Newman, 1997).

Whereas Newman's (1993; Duff & Newman, 1997) studies used an idiocentrism scale as a way to study individualism/collectivism at the individual level, Zárate, Uleman, and Voils (2001) opted to use two distinct cultural groups instead. One of the groups represented individualism, Anglo-Americans, and the other collectivism, Latin-Americans. However, in Study 1 they were unable to find significant differences between Anglos and Latinos in the inference of traits. They did find, however, differences in the task decision speed and trait

activation. In Study 2, in the multi-sentence stimuli set there were clear differences between Anglos and Latinos (i.e., Latinos made less STIs than Anglos) but no such difference in the single-sentence stimuli set. The authors propose that this is due to the fact that in the multi-sentence stimuli there is more situational information, and this resulted in less inferences by Latinos, but find it unlikely. Their second explanation is that the traits, behaviours, or both, were less likely to bind with the actors among Latinos. I would add two more possible explanations for these results. First, the Latino participants did the experiment in English, and with their identities as Latin-Americans, it is possible that the use of stimuli in English has primed an idiocentric self-construal (Lechuga & Wiebe, 2009). Secondly, considering the findings by Kitayama and colleagues (2003) in which Japanese-Americans showed results more similar to Americans than Japanese nationals, and more recent research which has shown that the longer Asian-born Asians live in the US, the more their PFC starts to resemble that of Americans (Kitayama, 2017), it is possible that the Latin-American sample was just too acculturated to the US.

Na and Kitayama (2011) opted to compare European-Americans, individualistic, with Asian-Americans, collectivistic. They created two versions of a lexical decision task using white faces for European-Americans and Asian faces for Asian-Americans, so the faces always matched the participants race. In Study 1, they found that whilst European-Americans showed trait activation and trait binding, this didn't happen for Asian-American participants in either measure. Thus, only European-Americans made STIs. In Study 2, the authors went even further, they used electroencephalography to measure the electrical activity of the brain. They were interested in the electrophysiological signal that is associated with the processing of semantically incongruent information - N400, they proposed that if traits had been previously inferred, when exposed to the faces once again, the traits would automatically activate. Thus, if the face was followed by an antonym of the trait, then there would be a strong N400 component. The authors also controlled the participants index of independent self-construal and used it in as mediator between culture and N400. The results showed that, European-Americans had a greater activation of the N400 component, but that the index of independence partially mediated the relation between culture and N400.

Lee and associates (2017) compared Japanese and European-Canadians in both STI and SSI in their native languages, that is, Japanese and English respectively. They opted to use the savings-in-relearning paradigm. They obtained that whilst European-Canadians did make more STIs than Japanese, they also made more STIs than SSIs. For Japanese nationals however STIs and SSIs were made at similar rates.

Shimizu and colleagues (2017) took the study of cultural effects on STIs even further. They used the false recognition paradigm and a process dissociation procedure – PDP (Jacoby,1991)[2] to analyse the controlled and automatic processes that contribute to STIs between American and Japanese participants in Study 1, and between European-American, Asian-American, and Japanese participants in Study 2. Study 1 obtained that Americans made more STIs than Japanese as expected, and, additionally, that only automatic processes varied between cultures, making STIs more automatic for Americans than Japanese participants. Study 2 obtained similar results between European-Americans and Japanese participants. However, there were no statistically significant differences between European-American and Asian-American participants. This goes in direct opposition with the results obtained by Na and Kitayama (2011) that showed Asian-Americans as not having automatized STIs. The authors suggest it may have been due to differences in sensitivity due to using distinct tasks and analyses.

Only Saribay and associates (2012) attempted to use a manipulation of independent/interdependent self-construal to study whether independence would result in more STIs. As previously mentioned, this has the advantage of making the study purely experimental and avoid issues relating to individual variability within a culture (Heine, 2012; Stevenson, 2010). However, the authors only obtained differences between a primed independent and interdependent self-construal for explicit impression formation (Study 3). That is, there was no effect of priming self-construals on STIs (Studies 1 and 2).

These authors have proposed different explanations for this cultural effect on STI. Newman (1993; Duff & Newman, 1997) proposed that such an effect of individualism on STIs is due to them not occurring only during categorization and characterization, but also during the correction stage of Gilbert et al. (1988)'s model. As we have previously seen, STIs despite being mostly automatic do need some cognitive resources (Uleman, Newman, & Winter, 1992). The fact that they do need them, makes it possible that part of STIs happens during the correction stage. Thus, Newman (1993; Duff & Newman, 1997) proposes that "individualists may more typically invoke trait categories at the first stage; they may be more

[2] PDP separates the contributions of different processes to the task performance. It separates automatic (A) and controlled (C) processes by using inclusion and exclusion task. The inclusion task has both these processes aiding task performance, whilst the exclusion task has them working in opposition. The estimate of C is then obtained by subtracting the exclusion task from the inclusion task (Jacoby, 1991; Shimizu et al., 2017). The hit rate is obtained through C and when it fails (1-C), their responses are based on A. Thus, hit rate = C + A(1-C) (Shimizu et al., 2017).

likely to make an initial dispositional inference; and finally, they may be less likely to correct any such inference in light of situational constraints on the behaviour they observe." (Newman, 1993, pp. 246-247).

However, the findings by Lee, Shimizu, and Uleman (2015) when studying STT put into question whether there is any influence of culture during correction as the cultural differences found between Euro-Americans and Asian-Americans in STT are "largely attributable to automatic processes." The authors suggest instead an extended model including "cultural differences in initial automatic processing of impression information". They propose these differences can be the result of attentional habits (i.e., focusing on the actor, or the interaction between actor and context), thinking habits (i.e., analytical or holistic thought), and implicit goals. The impact of thinking habits is further corroborated by Lee and colleagues (2017) which found STIs to be more prevalent in European Canadians participants and Spontaneous Situational Inferences (SSIs) more prevalent in Japanese participants, which is consistent with having either an analytic or holistic pattern of thought. This effect of culture in the automatic but not controlled processes of trait attribution was subsequently supported by Shimizu and colleagues (2017) which found a statistically significant difference between culture groups in automatic but not controlled processes.

Furthermore, according to social orientation theory, individualists tend to attribute behaviours to the subject's own personal characteristics such as traits. As the more we use certain social judgements, the more they become automatized, it follows then that individualists would make more spontaneous trait inferences due to making more trait categorizations of behaviours throughout their lives (Lee, et al., 2017; Newman, 1993; Shimizu, et al., 2017).

These results point towards that people from different cultures may not only behave differently and show different values and beliefs but also that they construct their social worlds in a different manner. Therefore, studying differences in STIs is crucial to understanding differences between individualist and collectivist societies as STIs "reveal more about individual differences in cognitive practice than intentional inferences (…)" (Zárate, et al., 2001, pp. 300).

As previously mentioned Saribay and associates (2012) already attempted to manipulate individualism/collectivism at the individual level by priming self-construals (i.e., independence/interdependence) and see whether it would mimic the "natural" cultural differences. Despite results showing that there was no effect of priming the self-construal in STI, both Studies 1 and 2 had rather small sample sizes (46 and 40 participants respectively)

and that is hardly enough to state as fact that there isn't an effect of primed independence/interdependence on STI. Particularly when one considers that the primer used was just a pronoun-circling task with no reinforcement and that they used single sentence behavioural descriptions. We on the other hand have decided to use two sentence behavioural descriptions as per Shimizu and colleagues (2017) for, as seen in Zárate and associates (2001), these can enhance differences in STI. Therefore, it's pertinent to check whether Lopes and colleagues (2017) manipulation with a reinforcement and two-sentence behavioural descriptions are able to attain statistical significance. Finding primed differences would avoid the previously cited issue of confounding or correlated variables (Oyserman & Lee, 2008). This was exactly what we did in Study 1 and we propose that (1) participants will make STIs and (2) participants in the primed independent self-construal condition will make more STIs than participants in the primed interdependent self-construal condition.

Considering there is currently no priming of individualism/collectivism that considers horizontality/verticality (Oyserman & Lee, 2008) we opted to use a different approach in Study 2: use a scale that measures the horizontal/vertical distinction of individualism/collectivism to measure individual differences. We consider the horizontal/vertical distinction to be of relevance for Shavitt and associates' (2011) found differences between individuals high on VI and low on VI on stereotyping and information processing, and recent research on creativity showed VI to be correlated with a fixed mindset (Karwowski & Brzeski, 2017; Karwowski & Tang, 2016; Tang, et al., 2016). Consequently, we propose that the effect of individualism on STI may be specific to VI. For only VI cultures (i.e., American and Canadian) have been used to represent individualism. Hence, we applied a translation of the culture orientation scale (Singelis et al., 1995). We propose that (1) participants will make STIs. If the effect of culture on STI is due to individualism, then (2) participants with a predominantly individualistic cultural orientation (i.e., VI and HI) will make more STIs than those with a collectivistic cultural orientation (i.e., VC and HC), if however STIs are a characteristic of VI in particular then (3) participants with a HI cultural orientation will not make more STIs than participants with a collectivist cultural orientation (i.e., HC and VC).

CHAPTER II: EMPIRICAL RESEARCH

The following two studies were elaborated towards a better understanding of the effect of culture on STIs. Previous studies have, somewhat consistently, shown that those from individualistic cultures tend to make more STIs than those from collectivistic cultures (Duff & Newman, 1997; Lee et al., 2017; Na & Kitayama, 2011; Newman, 1993; Shimizu et al., 2017; Zárate et al., 2001), however only once was there an attempt to manipulate these constructs and it didn't find any differences between primed independence/interdependence (Saribay et al., 2012) and none considered the horizontal/vertical distinction of individualism/collectivism. The first aspect will be the focus of our Study 1, and the second of our Study 2.

To test the impact of priming independence/interdependence (Study 1) as well as of the horizontality/verticality cultural distinction (Study 2) on STI, an adaptation of the false recognition paradigm was used (Todorov & Uleman, 2002; 2003; 2004). This adaptation was similar to the one used by Shimizu and colleagues (2017). In exposure participants become acquainted with photo-behaviour pairs which they are asked to memorize for a subsequent memory test. The behaviours could have a trait explicitly stated (e.g., "*É muito desastrada tanto que trazia o tabuleiro e deixou cair tudo no chão porque olhou para a mesa de trás. Entornou o café*." ["She's so clumsy that she dropped her tray when she looked at the table behind her. She spilled the coffee."]), could have an implicit trait (e.g., "*Perguntou três vezes à rececionista se faltava muito para ser atendida. Saiu da secretaria antes de ser atendida*." [She asked the receptionist three times whether it would take long. She left the secretariat before being attended.]; "*impaciente*" [impatient]) or could describe neutral behaviours (i.e., shown to have low trait-consensus; e.g., "*Naquele dia levou consigo o guarda-chuva. No caminho para o emprego comprou uma revista*." [She carried an umbrella with her that day. On her way to work she bought a magazine.]). In recognition participants see photo-trait pairs and must decide whether the trait was in the behavioural description accompanying the photo during exposure. The trait could have been explicitly stated in the behaviour paired with the photo during exposure, could have been a trait implied by the behaviour but not explicitly stated, or could be the trait belonging to a behaviour paired with another photo.

The dependent measures in the false recognition task were the hit rate, the false recognition rate, and the guessing rate. The "hit rate" was the rate of "Yes" responses to trials referring to traits that were explicitly stated in the behaviours in the exposure task paired with that same photo. The "false recognition" was the rate of "Yes" responses to traits that had only been implied during exposure. "guessing" was obtained by examining the "Yes" responses to the pairs in which trait and photo did not correspond to what was (implicitly or

explicitly) stated in the exposure task; this was calculated not only to prevent "guessing" by participants but also to control for familiarity with the pairs' components.

Study 1

Study 1's objective was to see whether one could successfully prime independence/interdependence in such a way that it mimicked the differences found in STIs between individuals from individualistic and collectivistic countries.

To activate an independent or interdependent self-construal we followed the same adaptation of Brewer and Gardner's (1996) procedure used by Lopes et al. (2017) which includes a reinforcement of independence/interdependence by having participants working solo, sitting and solving the task alone, or in groups made to sit in a circle. Afterwards, the participants were took part in a modified form of Todorov and Uleman's (2002; 2003; 2004) false recognition paradigm to measure STI similar to the one used by Shimizu et al. (2017). This makes this study purely experimental.

Despite Saribay and associates (2012) using a similar task to study the same, our study has a few key differences: firstly, our priming task was reinforced as previously mentioned, but also, the use of two-sentence behavioural descriptions should make differences between independents/interdependents more salient (Zárate et al., 2001; Shimizu et al., 2017).

The study's hypotheses are that (1) participants will make STIs, this should translate into participants saying that a trait was present when it was only implied in comparison to when it was mismatched, and that (2) participants in the primed independent self-construal condition make more STIs than those in the primed interdependent self-construal condition. This should translate in more false recognitions, i.e., in saying that the trait was present in the sentence what it was actually only implied by the behaviour described.

Method

Participants.

There were 46 Portuguese participants in this study of which 35 (76%) were undergraduate students of Psychology at ISCTE-IUL and signed up for the study through SPI - *Sistema de Participação em Investigação em Psicologia* so they could earn extra credit for their courses. The other 11 participants were either ISCTE-IUL students that didn't require any extra credit or their acquaintances and were, therefore, volunteers. Whilst there were

participants of both genders, 35 were women (76%) and the age range was between 19 and 63 years-old with the average being of 23.59 (SD = 7.94). 2 participants were excluded as they correctly identified the purpose of the experiment.

Design.

Experimental design: 2 (Primed self-construal: independent, interdependent) X 3 (Trial type: hit, false recognition, guessing) X 2 (Version: A, B) of which both the manipulation and version were between-participants, and the trial type was within-participants.

Materials.

Self-construal priming.

The self-construal was primed with the use of Lopes and associates' (2017) same booklet which consists in a pronoun-circling task to manipulate independence/interdependence. To reinforce the self-construal manipulation, participants are told to work in groups or alone, respectively (Appendix A).

False recognition.

Photos used for the false recognition paradigm were obtained from Garrido, Lopes, and collaborators (2017) and complemented with photos from Minear and Park (2004). The photos from Minear and Park (2004) corresponded to 53% of the feminine faces and 30% of the masculine faces in the stimulus set. These photos were slightly edited for coherence with the photos from Garrido, Lopes, and associates (2017). The editing consisted in readjusting brightness and contrast as well as their size. All photos were in colour and all the individuals depicted had neutral expressions and matched the predominant Portuguese phenotype (i.e., dark-haired Caucasians; Candille et al., 2012). 17 photos were of masculine faces and 17 of feminine faces (Appendix B).

Behaviour descriptions were selected from Ferreira, Morais, Ferreira, and Valchev (2005), Garrido (2003), Garrido, Garcia-Marques, and Jerónimo (2004), Jerónimo, Garcia-Marques, and Garrido (2004), Orghian (2017), Silva (2015), and Simões (2011). The initial selection was made according to four main characteristics: there had to be at least two sentences for each trait; sentences with a high trait consensus were preferred; half of the implied the traits had to be positive (e.g., "generoso" [generous]) and half negative (e.g., "estúpido" [stupid]); a third of the traits had to be from the intellectual dimension (e.g., "inteligente" [intelligent]) whereas another third had to be from the social dimension (e.g.,

"confiante" [confident]) and the final third implied non-central traits (e.g., "aventureiro" [adventurous]). The sole exception to these rules were the sentences for the neutral behavioural descriptions.

Twelve behavioural descriptions implied traits (e.g., "*Deixou de ir a três festas para se preparar para o exame de química. Tirou notas elevadas nos exames finais*." [She didn't attend three parties to prepare for a chemistry final. She got high grades in her finals.]; implies the trait "*estudiosa*" [studious]), twelve others explicitly stated traits (e.g., "*É artística então faz esculturas com materiais diversos. Expôs os seus trabalhos numa galeria importante*." [She's artistic so she sculpts with diverse materials. Her work was exposed in an important gallery.]), and the last ten were neutral descriptions which had previously been shown to have low consensus on trait implication (e.g., "*Estacionou o automóvel perto de casa. Tirou a chave do bolso para abrir a porta.*" [She parked her car near her house. She took the keys out of her pocket to open the door.]; Appendix C). For each explicit trait, trait-implying, and neutral description, two coherent sentences were paired. The two sentences used for neutral behavioural descriptions had to make semantic sense, whereas for both explicit trait and trait-implying behavioural descriptions the sentences' traits also had to match (i.e., both sentences used in one behavioural description must imply the same trait) as per Study 2 in Shimizu et al. (2017). The use of two sentence stimuli should enhance differences between individualists and collectivists in STIs due to the larger amount of available information about the actor and context.

Anagrams were created for the filler task (Appendix D).

All materials were in Portuguese.

Procedure.

There was a maximum of eight participants per session. Participants were randomly assigned to one of the two design conditions (i.e., independent or interdependent). The two tasks (i.e., the manipulation and the false-recognition tasks) that comprise this study were presented as being unrelated.

To activate the "interdependent view of the self" the participants formed groups of three or four individuals and completed a booklet together. This booklet provided instructions for the group task and mentioned that previous empirical studies showed groups to perform better in this task. This was done to foster interdependence and experience sharing between the participants. Following this, the booklet introduced the "organization of daily information" task which consists in searching for certain words in a text (Brewer and

Gardner, 1996; Lopes et al., 2017). The text described a neutral daily situation of a couple leaving their home and taking their child to school, it had 41 pronouns scattered throughout. In the interdependent condition the participants looked for the plural pronouns (e.g., "nós" [we], "nosso" [our], etc.). There were no specific instructions on how the groups should work in this task, just that they should do it as a group.

The exact same procedure was used for the independent condition. However, instead of working in groups, participants were instructed to do the task individually and that previous research had shown this to yield better results. Furthermore, they now had to find the 41 singular pronouns in the text (e.g., "eu" [I], "meu" [mine], etc.).

After this, participants in both conditions answered individually to a small individualism/collectivism Likert-type scale in order to verify whether the manipulation had been successful. This scale had 24 items, twelve measuring individualism and twelve measuring collectivism (Lopes et al., 2017). Participants answered in a scale from 1 ("completely disagree") to 6 ("completely agree") whether certain affirmations applied to them and in what measure.

The first task was presented as being unrelated with the false-recognition task. Therefore, after the first task was completed, participants were led to the computers. To conduct this part of the experiment, consisting of the false-recognition task, E-Prime 2.0 was used (Schneider, Eschman, & Zuccolotto, 2002). All the instructions were given on the monitor and the participants were led to believe the study was about memory rather than impression formation (Appendix E). As previously mentioned, participants took part in a modified version of the false recognition paradigm (Shimizu et al., 2017; Todorov & Uleman, 2002; 2003; 2004).

In exposure, participants saw a series of 34 randomized photo-behaviour pairs and were asked to try to remember them for a memory test afterwards. Photos were presented above the behavioural descriptions which were written in white as the screen was black. Twelve photo-behaviour pairs had the trait explicitly stated in the behaviour, there were another twelve pairs in which the trait was implied but not stated outright. The last ten had photos paired with neutral behaviours. Photo-behaviour pairs were randomly presented, and each pair was on the screen for 8s; there was no waiting period between pairs nor fixation point (Shimizu et al., 2017; Appendix F).

After the exposure task, participants had a filler task to eliminate short-term memory effects. In this task, participants were asked to solve the maximum number of anagrams they could within 5 minutes (Shimizu et al., 2017). The anagrams were randomly presented, and

the participants were asked to type in their solutions. Each anagram would remain on the screen until the participant provided an answer.

Once this task was concluded, it was time for the recognition task. In this task the participants saw a series of 24 photo-trait pairings and were asked to remember whether the trait had been included in the sentence during the exposure task. Participants were asked to identify as quickly and accurately as possible whether the trait was included in the description of the sentence that had accompanied each picture. To facilitate the task and make sure participants would answer as fast as they could, they were instructed to keep their fingers in the "l-key" and "d-key". Furthermore, stickers had been placed in the keys, explicitly, a green sticker was on the "yes" key (assigned to the "l-key" in Version A and "d-key" in Version B of the study), and a red sticker was on the "no" key (assigned to the "d-key" in Version A and "l-key" in Version B; Amado, 2016; Ramos, 2009). Although, the participants were instructed to respond as fast and accurately as possible, the stimuli remained on the screen until they gave a response (Shimizu et al., 2017; Appendix G). Before they started with the 24 photo-trait pairs, two practice trials were completed with new photos and traits so participants could familiarize themselves with the task.

During the recognition task, half the pairs had been mismatched, that is, the photo had been paired with a trait which belonged to another photo during the exposure task.

Finally, participants filled a short questionnaire about the experiment: whether they had participated in anything similar, recognised any of the people in the photos, and what they thought the experiment was about; were thanked and debriefed.

Independent and Dependent Variables.

The independent variable was the primed self-construal.

The dependent variables were the averages of the "hit", "false recognition", and "guessing". These averages were used to check the occurrence of STI and corresponded respectively to hitting "yes" when the trait was present in the behavioural description (hit), participants hitting "yes" when the trait was only implied in the behavioural description (false recognition), and, finally, hitting "yes" to a trait that had been mismatched with a certain actor (guessing). These variables had a possible range of 0 to 1, in which 0 meant all the responses were "No" and 1 that all responses were "Yes".

Results

Manipulation check.

The reliability of the verification scale was acceptable. The 12 items measuring individualism showed a moderate reliability ($\alpha = .61$) whilst the 12 items measuring collectivism showed a high reliability ($\alpha = .76$; Hinton, Brownlow, McMurray, & Cozens, 2004). Thus, the items measuring individualism were reversed so that all 24 items could be transformed into a continuous scale in which values closer to 1 mean one is more individualistic and those closer to 6 mean one is more collectivist.

A t-test for comparison of means was then made to verify whether the manipulation had the desired effect. Although those in the interdependent condition did have a higher scale average ($M = 3.49$, $SD = .34$) than those in the independent condition ($M = 3.33$, $SD = .42$) the difference was not statistically significant ($t(44) = 1.43$, $p = .16$).

Nevertheless, we proceeded with the analysis as this might have been a problem of the manipulation check and not the manipulation itself.

Main analysis.

We used a Mixed ANOVA to 2 factors: 2 (Primed self-construal: independent or interdependent) x 3 (Trial type: hit, false recognition, guessing) with repeated measures on the latter factor.

Considering the assumption of sphericity was not verified ($p = .01$) to check whether these differences were significant we used the Huynh-Feldt correction for the within-subjects effects ($\hat{\varepsilon} = .89$; Field, 2009).

The main effect of the trial type was statistically significant ($F(1.79,78.68) = 45.71$, $p < .001$, $\eta^2 = .51$), that means that there were differences between hit, false recognition, and guessing rates. The hit rate was .76 (SD = .18), false recognition was .40 (SD = .23), and guessing was .66 (SD = .16). Participants showed significantly less false recognition of implied traits than guessing ($t(45) = -6.72$, $p < .001$) refuting the first hypothesis, thus participants did not make STIs and appear to have used guessing strategies.

The main effect for the primed self-construal ($F(1,44) = .07$, $p = .40$) and the interaction between the two variables ($F(1.79,78.68) = .903$, $p = .40$) did not attain statistical significance (see Figure 2.1). This means that there were no differences in the general response rates between those primed for independence and those primed for interdependence, nor did independents make more false recognition than interdependents. Thus, even if the participants had not used guessing strategies, the second hypothesis would still be rejected.

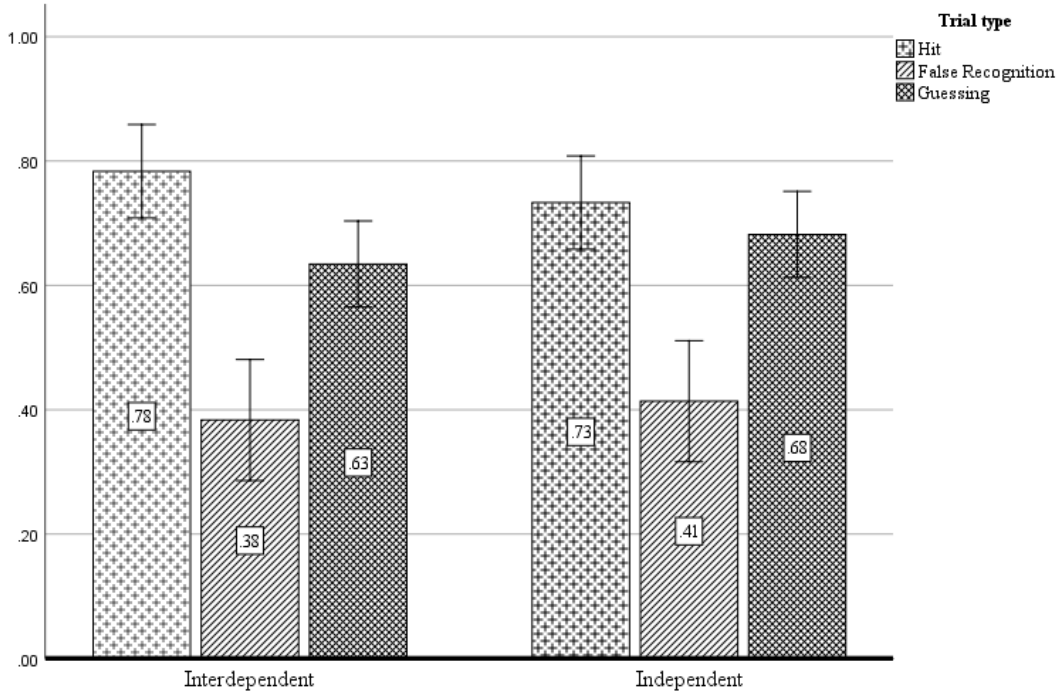

Figure 2.1: Estimates of trial types by self-construal condition. Error bars represent standard errors.

Discussion

Statistically significant differences between hit, false recognition, and guessing rates were found, however, these seem to be the result of participants guessing and thus, we reject the first hypothesis, that is, we rejected participants making STIs.

Saribay and associates (2012) did use an analogous manipulation to the one used by Lopes and colleagues (2017), but the latter reinforced the manipulation by making participants work alone or in groups sitting in a circle when doing the pronoun-circling task. This serves to strengthen the primed independent/interdependent self-construal and make it more likely to be able to mimic differences between individualists and collectivists. It was this reinforced manipulation that we opted for, Additionally, we used two sentence behaviour descriptions so that our false recognition task so that we would enhance differences between independents/interdependents as per Zárate and colleagues (2001; Shimizu et al., 2017). However, just like in Saribay and associates' (2012) work, the primed self-construal appeared to have no effect on STIs.

Furthermore, the manipulation-check scale also did not accuse any differences between the primed self-construals. This seems to go in hand with Oyserman and Lee's (2008) stating that pronoun-circling tasks have a low effect size on self-concept measures (d = .22). An alternative possibility is that due to our participants having been mostly women (76%) that the manipulation-check was inadequate for most measures of

individualism/collectivism have been tested with predominantly male samples (Newman, 1993).

The fact that Study 1 also suffered from having a small sample size and, consequently, lack statistical power. All this, plus participants seemingly using guessing strategies, make a replication with a larger sample size necessary for we cannot adequately confirm nor reject the second hypothesis (i.e. that primed independents make more STIs than interdependents).

Study 2

Study 2's objective was to see whether the horizontal and vertical distinction of individualism/collectivism has an effect on STIs considering the findings connecting VI with having a fixed mindset (Karwowski & Brzeski, 2017; Karwowski & Tang, 2016; Tang, et al., 2016) and also the use of a stereotyping mindset (Shavitt et al., 2011).

Unfortunately, the only way to study horizontal/vertical forms of individualism/collectivism are through measuring them at the individual level or by using distinct cultural groups (Oyserman & Lee, 2008). This means that unlike Study 1, this Study was quasi-experimental as the independent variable was measured but not manipulated.

To measure horizontal and vertical forms of individualism/collectivism, we used a translation of Singelis and colleagues' (1995) cultural orientation scale. Afterwards, the participants took part in the same modified form of the false recognition paradigm (Shimizu et al., 2017) used in Study 1 to measure STI.

The study's hypotheses are (1) participants make STIs (i.e., participants will have a higher false recognition than guessing rate), then if the effect of culture on STI is due to individualism regardless of horizontality/verticality then (2) participants with a predominantly individualistic cultural orientation (i.e., VI and HI) will make more STIs than those with a collectivistic cultural orientation (i.e., VC and HC; this should translate in individualists making more false recognitions than collectivists.), if however STIs are a characteristic of VI in particular then (3) participants with a HI cultural orientation will not make more STIs than participants with a collectivist cultural orientation (i.e., HC, and VC; translating in equal false recognition rates).

Method

Participants.

There were 94 Portuguese participants in this study of which there were 41 men (43.6%), 50 women (53.2%), and 3 participants that chose other (3.2%). The age range was between 18 and 65 with an average of 29.87 (SD = 7.58). 8 participants were excluded as they correctly identified the purpose of the experiment.

Design.

Quasi-experimental design: 4 (Cultural orientation: VI, HI, VC, HC) X 3 (Trial type: hit, false recognition, guessing) of which the latter was within-participants.

Materials.

The same materials of Study 1 were used with two exceptions. First, there was no manipulation of independence/interdependence, so there was no use of the booklet by Lopes and associates (2017). Secondly, a translation of Singelis and collaborators' (1995) culture orientation scale was used. The translation used was obtained by reading and matching the two attempts made to translate it to Portuguese (Azevedo Nogueira, 2012; Ferreira, 2013) and by comparing with the original version (Singelis et al., 1995). Some minor corrections were made for item clarity (Appendix H).

Procedure.

Unlike the previous study, Study 2 was entirely conducted online and in Qualtrics. As the study was an online one and so were its instructions, consent and debriefing (Appendix I). Participants started by answering a few demographic questions and then were asked to respond whether the affirmations of the culture orientation scale (Singelis et al., 1995) applied to them in a 1 ("completely disagree") to 7 ("completely agree") Likert-type scale.

After this, the procedure and stimuli were the same as in Study 1, except that, as this study ran on Qualtrics, "yes" was always the "l-key" and "no" was always the "d-key". That means that unlike the first study there weren't 2 versions. Another difference was with the anagram filler task, now instead of anagrams appearing on the screen randomly and one at a time, they were all shown on the screen and the person could solve them in whatever order they desired.

Independent and Dependent Variables.

The independent variable was the cultural orientation of participants obtained through the cultural orientation scale.

As in Study 1 the dependent variables were the averages of the "hit", "false recognition", and "guessing" which were used to check for the occurrence of STI. Once again, the range of these variables was between 0 which meant the responses had all been "No" and 1 which meant all "Yes".

Results

Scale reliability and participants' cultural orientation.

The reliability of each of the 4 dimensions measured by the culture orientation scale was acceptable (VI α =.66; VC α =.60; HI α =.64; HC α =.56; Hinton et al., 2004). And even had it not been so, Triandis and Gelfand (1998) stated that low coefficients are acceptable when dealing with culturally homogenous groups as culture implies shared meanings.

Unlike the theoretical prediction that participants would have a higher average of HC, it was obtained a higher average in HI as seen in Table 2.1 below, but this did not achieve statistical significance (p =.81). The difference between the paired averages was significant for all but HC-HI as seen in Table 2.2.

Table 2.1: Means and standard deviations for each cultural orientation

	M	SD
VI	3.00	.88
HI	5.41	.74
VC	4.04	.84
HC	5.38	.63

Table 2.2: Paired-samples t-tests

	t(93)
VC - VI	9.73*
HI - VC	12.21*
HC - HI	-.25
HC - VI	20.95*
HI - VI	22.59*
HC - VC	15.57*

*p<.001

However, after creating a variable representing the predominant cultural orientation of participants as per Azevedo Nogueira's (2012) suggestion, we obtain that HC is preferred by 48.9% (N = 46) of the participants, followed by HI at 45.7% (N = 43), and VC at 5.3% (N =

5). Not a single participant had VI as their main cultural orientation. This variable will henceforth be referred as cultural orientation.

As we could only define 5 individuals as mainly VC, we decided to exclude them from further analysis as it would have a high error rate.

Independent sample t-tests were done to check whether those defined as HI and those as HC in the cultural orientation variable had significant differences in their scale responses. Indeed, it was so with HIs agreeing more with the sentences that measure HI (M = 5.94, SD = .50) than the sentences that measure HC (M = 4.93, SD = .57; t(87) = 8.83, p <.001). HCs on the other hand showed the opposite (HC: M = 5.64, SD = .57; HI: M = 5.10, SD = .58; t(87) = -4.41, p < .001).

Main analysis.

The fact that there were no VI and not enough VC to conduct the analysis resulted in reducing the 4 (Cultural Orientation: VI, HI, VC, HC) X 3 (Trial type: hit, false recognition, guessing) design to a 2 (Cultural Orientation: HI, HC) X 3 (Trial type: hit, false recognition, guessing).

The cultural orientation variable was then used to do a Mixed ANOVA to 2 factors: 2 (Cultural Orientation: HI, HC) x 3 (Trial Type: Hit, False Recognition, Guessing) with repeated measure of the latter.

Sphericity was verified (p = .07).

The main effect of trial type was statistically significant (F(2,174) = 75.37, p < .001, η^2 = .46), this means there were differences between hit, false recognition, and guessing rates. The hit rate was .75 (SD = .24), false recognition was .55 (SD = .26), and guessing was .36 (SD = .21). Participants showed significantly more false recognition of implied traits than guessing (t(88) = 5.86, p < .001) confirming the first hypothesis, that is, that participants made STIs.

However, neither the main effect for the cultural orientation condition (F(1,87) = .93, p = .34) nor the interaction of cultural orientation and trial type (F(2,174) = .06, p = .94) achieved statistical significance (see Figure 2.2). This means that whilst the second hypothesis, that individualists in general (i.e., both VI and HI) would make more STIs than collectivists in general (i.e., both VC and HC) was rejected; the third hypothesis, that HI would not make more STIs than HC is accepted.

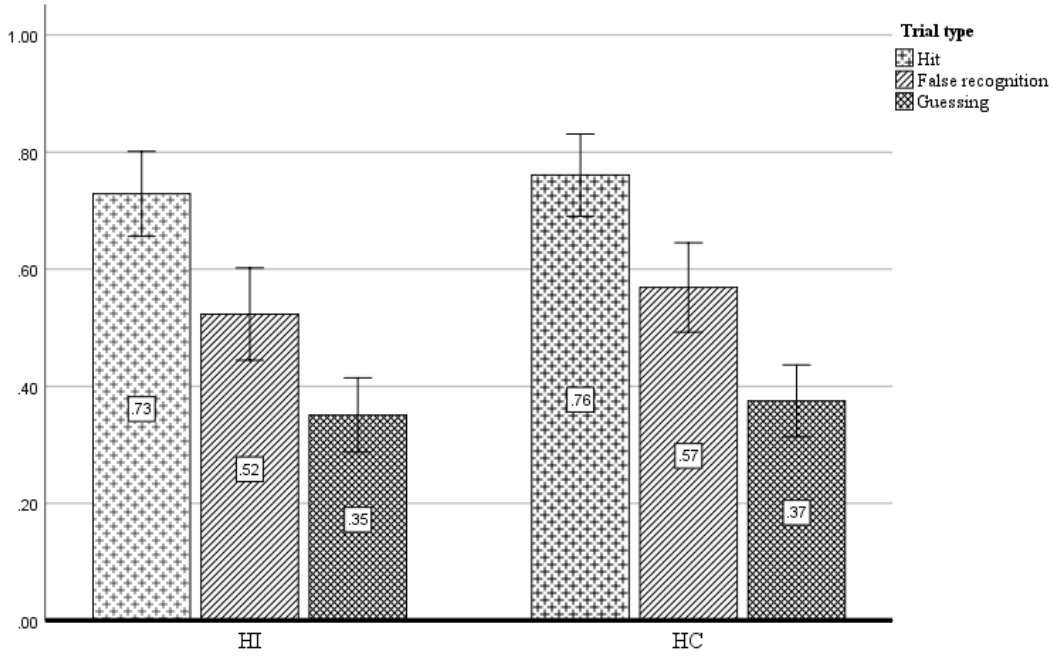

Figure 2.2: Estimates of trial types by cultural orientation. Error bars represent standard errors.

Discussion

As expected there were statistically significant differences between hit, false recognition, and guessing rates. In fact, we confirmed the first hypothesis, that is, that participants made STIs.

However, there was no statistically significant difference of cultural orientation nor trial type by cultural orientation. This is a particularly interesting finding as research on cultural differences on STIs tends to assume the differences are due to individualism/collectivism. Thus, as HI is a form of individualism it should have resulted in more STIs than HC, which is a form of collectivism. However, despite having to reject our second hypothesis that individualism would result in more STIs than collectivism, we ended up accepting our third hypothesis, that is, that HI would not make more STIs than HC. This could be because the paradigm is not sensitive to differences between HI and HC but also makes it possible that STIs could be a unique characteristic of VI. However, to unequivocally state that VIs make more STIs than the other cultural orientations, participants with that cultural orientation are required and we did not have them. Still, these results are rather interesting as they suggest that horizontality/verticality is an important and overlooked factor when studying cultural influences on STIs.

CHAPTER III: GENERAL DISCUSSION AND CONCLUSION

General Discussion

Within this dissertation we attempted to better understand Cultural influences on STI. Whilst there has been considerable research on cultural effects on STI, they have mostly focused on the individualism/collectivism duality and tended to use VI and VC samples (Duff & Newman, 1997; Lee et al., 2017; Lee, Shimizu, & Uleman, 2015; Na & Kitayama, 2011; Newman, 1993; Shimizu et al., 2017; Zárate, et al., 2001) and only once was there an attempt manipulating self-construal to see whether it would translate in similar results (Saribay et al., 2012). With this in mind we decided to attempt bridging this knowledge gap.

Directly priming an independent/interdependent self-construal has its advantages to studying culture. Firstly, this manipulation can be used to study cultural effects because the independent/interdependent self-construal differ according to the culture (Brewer & Gardner, 1996; Lopes, et al., 2017; Ybarra & Trafimow, 1998; Zhu, et al., 2007). Individualistic cultures have an independent social orientation, whereas collectivistic cultures show an interdependent one (Markus & Kitayama, 1991; Lee, Shimizu, Masuda, & Uleman, 2017). Additionally, by priming this cultural aspect we get a purely experimental study instead of quasi-experimental and, therefore, avoiding the issue of disregarding individual variations (Heine, 2012; Saribay, et al., 2012; Stevenson, 2010; Oyserman & Lee, 2008). Moreover, it also avoids the issue of possible confounding and correlated variable for only one single aspect of culture is being manipulated (Oyserman & Lee, 2008). Finally, there have been previous studies corroborating this manipulation as being able to attain consistent results with natural individualism/collectivism (Brewer & Gardner, 1996; Lopes, et al., 2017). These reasons plus the fact that Lopes and associates' (2017) manipulation included a reinforcement was why we opted to use a manipulation in Study 1.

However, Study 1's results didn't attain statistical significance. One of the issues was that, like I had mentioned for Saribay and colleagues' (2012) work, I only managed to get a small sample size (N = 46). Such a sample has low statistical power which can result in statistical errors such as the type II statistical error which means rejecting a correct hypothesis. Also, Oyserman and Lee (2008) had already warned of the low effect size of pronoun-circling tasks on self-concept measures, which makes having a large sample incredibly necessary. Sadly, we were unable to recruit more people despite trying and even managing to recruit some volunteers to complement those that signed up through SPI - *Sistema de Participação em Investigação em Psicologia*.

Another issue was the high guessing rate which was incredibly odd and showed that participants tended to use guessing strategies and thus, the false recognition rate didn't show STIs (Todorov & Uleman, 2002; 2003; 2004). This might have been due to participants becoming suspicious about the 2 tasks, priming and false recognition, due to them having been presented as unrelated whilst being told they were about somewhat similar subjects (organization of daily information and memory respectively)[3]. Trust has been shown to be an important factor for information processing, as distrust results in people considering situational factors more as well as automatically activating incongruent cognitions (Fein, Hilton, & Miller, 1990; Schull, Mayo, & Burnstein, 2004). Another alternative explanation was that considering 5 participants recognised some of the people in the photos used in the stimuli set, and 3 others being unsure if they did, this could have resulted in the inhibition of false recognition if the trait in question is incongruent with pre-existing expectancies about the subject (Jerónimo, Garcia-Marques, Ferreira, & Macrae, 2015) but that ended up being discarded after further testing [4].

These unanswered questions and sampling issues make it more pertinent to repeat this study in the future with a larger sample size and perhaps changing the task presentation. Instead of presenting the tasks as unrelated, perhaps it would be better to present the priming task as being helpful towards the "memory task" (i.e., the false recognition task). This would be similar to what is already done with the filler anagram used in the false recognition task to clear short term memory. It is presented as serving to analyse how people extract information. Perhaps the same could be said about the first task to avoid possible distrust.

We also set to explore whether there was an effect of horizontality/verticality on STIs. Sadly, as we have mentioned before, there is no manipulation of these forms of individualism/collectivism (Oyserman & Lee, 2008) and considering the difficulty of accessing and creating stimuli sets to directly compare different cultures, we opted instead to apply the culture orientation scale (Singelis et al., 1995). This scale allows us to study individualism/collectivism at the individual level which does have a small advantage over

[3] In fact, a few participants did say that the study's objective was related to how they organize information and memorize it which does seem to imply they did distrust the tasks being presented as unrelated.

[4] We repeated the analysis excluding these participants and no difference was found. However, as the sample size was already small it possibly resulted in participants that used a guessing strategy to appear more common than they were. Thus, whilst we cannot fully exclude a possible effect of pre-existing expectancies on STIs in this study, it is highly unlikely.

using natural cultural groups as it accounts for individual variability. Nevertheless, as cultures imply shared values and meanings this means that it was unlikely that we would see each of the 4 cultural orientations to be equally represented in our sample (Baumeister & Buschman, 2013; Chiu, Ng, & Au, 2013; Kashima, 2007; Triandis & Gelfand, 1998). It was indeed so, with 48.9% of our participants being HC, followed by 45.7% HI, and 5.3% VC. No participant was VI. The rather evenly distribution of participants between HI and HC might be due to the fact that most participants had some degree of higher education (64.8%). As previous research has shown, more education results in higher individualism (Santos, Varnum, & Grossmann, 2017). Thus, this does not necessarily mean Portugal is as HI as HC despite it being true that it is becoming more individualistic (Santos et al., 2017).

The importance of considering these distinctions of individualism/collectivism when studying STIs is because previous research has found that VI, but not the other alignments, to be related with certain mindsets, in particular the stereotyping and fixed mindsets (Karwowski & Brzeski, 2017; Karwowski & Tang, 2016; Shavitt et al., 2011; Shavitt, Lalwani, et al., 2006 Tang, et al., 2016). These two mindsets are quite important to person perception and, consequently, STIs as a stereotyping mindset implies attending more to information congruent with one's initial expectation about another person (Shavitt et al., 2011; Shavitt, Lalwani, et al., 2006), and a fixed mindset implies seeing personality traits as being set in stone instead of being able to be improved upon (Dweck, 2006). Additionally, Shavitt and associates also state that HC uses an individuating mindset (i.e., focusing on incongruent information instead) and that HI doesn't use a stereotyping mindset unlike VI (2011). Therefore, it is possible that it is these mindsets, that affect how one perceives other people and their personal characteristics such as traits, that affect STIs. Our results seem to point towards this explanation as we did not find differences between those with an HI (a form of individualism) and HC (a form of collectivism). As research has only used VI cultures to study the effect of individualism/collectivism on STIs, it is possible that STIs are automatized for VI but not HI. However, as we didn't have participants with a VI cultural alignment we cannot extrapolate this from our data for the paradigm might lack sensitivity to differences between HI and HC. We do think this should be explored further and would advise for future studies on the effect of individualism/collectivism to make a four-country comparison if possible, using a VI, a VC, a HI, and a HC cultures.

Another possible solution is instead to prime or measure these mindsets, or other related mindsets (e.g., priming a creative mindset seems to inhibit a stereotyping mindset; Sassenberg & Moskowitz, 2005) and see if they reflect on participants making more false

recognitions. The priming option could be a solution and would have the previously mentioned advantage of making the study experimental and avoiding confounding and correlated variables (Oyserman & Lee, 2008).

However, considering how STIs are mostly automatic, and cultural effects on STIs seem to occur in their automatic processes (Lee, Shimizu, & Uleman, 2015; Lee, et al., 2017; Shimizu, et al., 2017) one must always keep in mind that priming cultural aspects and even mindsets might not work for it may only affect controlled but not automatic processes and we yet do not know exactly why some types of priming work on false recognition rates and STIs whereas others do not (Saribay, et al., 2012). Therefore, maybe a set of studies, some with priming, some with direct measures or natural cultural groups, might be the better approach so not to be blindsided. We must note that some priming has been shown to work in regards to STIs, such as psychological distance (Rim, Uleman, & Trope, 2009) and that the priming not working in Study 1 might be due to the small sample, or because pronoun-circling tasks have been shown to have a low effect size on self-concept (Oyserman & Lee, 2008), but with the reinforcement we used, as per Lopes and associates' (2017) booklet, it is unlikely as it should have overcome this particular issue.

Finally, we should have analysed the response times in both studies considering the findings of Zárate and colleagues (2001) in their Study 1. As we used a different paradigm it did not occur to us to do so. Future studies should take this aspect into consideration.

Conclusion

Culture is ubiquitous, and we still have much to learn about how it affects us and how we perceive our reality and when/how manipulated cultural dimensions result in changes to this perception. Even as much remains unaddressed about how culture influences our cognition, we keep learning and discovering more about it, STIs being but a small piece of the puzzle of how culture shapes us. There are, of course, limitations to what one can find about cultural effects. Priming might not work as cognitive processes become automatized with use, and using natural groups or distributions, results in possible confounding and correlated variables. But the more we research and control more factors, the more we can pinpoint the underlying processes that result in phenomena such as STIs.

Technology too aids in this endeavour, and perhaps the emerging area of cultural neuroscience is a sign that researchers are becoming more and more interested not only on

how humans shape their cultural environment, but also how this cultural environment shapes them in return.

Cultures are diverse, much like humans, and the human experience, by looking at culture and how it affects us, we learn more about ourselves.

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APPENDIX

Appendix A

Lopes, et al. (2017) booklet

Interdependent Condition

Introduction

O Departamento de Psicologia Social e das Organizações do ISCTE encontra-se a realizar um estudo sobre o modo como organizamos a informação que recebemos todos os dias, e como esta informação nos afeta pessoalmente.

Vamos pedir-lhe que trabalhe em GRUPO numa tarefa de procura de palavras.

Estudos anteriores mostraram que o desempenho das pessoas nesta tarefa era melhor quando realizada em grupo do que quando realizada individualmente.
Por esta razão, pedimos que se juntem em GRUPOS de 3 ou 4 pessoas.

Pedimos, então, que execute a tarefa que lhe propomos da melhor forma possível e que responda a todas as questões que lhe apresentamos com sinceridade. Neste questionário, não existem respostas certas ou erradas, ou respostas mais desejáveis ou menos desejáveis.

Muito obrigado pela sua colaboração

Task Instruction

Na tarefa que lhe propomos de seguida, vamos pedir-lhe para trabalhar em GRUPO. Para tal, o GRUPO deverá ler um texto e assinalar com um círculo todos os pronomes na primeira pessoa do plural que encontrar (por exemplo, NÓS, NOSSO, NOS, NOSSA, etc.).
Os dois primeiros exemplos estão já marcados no texto

«VIRE A PÁGINA POR FAVOR»

Pronoun-circling Task

Naquele dia tínhamo-nos levantado cedo para levar o nosso filho à escola antes da reunião. Vestimo-nos rapidamente, tomámos o nosso pequeno-almoço, e saímos a correr de casa com o nosso filho. Fomos descendo as escadas, vestindo, ainda, os nossos casacos. Estávamos um pouco em cima da hora para ir levar o nosso filho à escola e para chegar à reunião. Naturalmente, nós estávamos um pouco nervosos. Não que a nossa vida fosse ficar decidida naquele momento. Mas nós sabíamos que algo importante e positivo nos podia acontecer nesta reunião…

Já tínhamos fechado a porta do nosso prédio quando, por mero acaso, nos apercebemos de que não tínhamos posto o equipamento da ginástica na mochila do nosso filho. Pedimos-lhe para esperar um pouco, enquanto nós íamos de novo a casa. Voltámos para trás para abrir a porta do nosso prédio e, de repente, lembramo-nos de que não tínhamos as chaves da nossa casa. "Que azar!", pensámos. "E agora? O que vamos nós fazer?". O pânico instalou-se nas nossas cabeças, olhámos para o nosso filho e ele perguntou-nos o que se estava a passar. Pedimos-lhe que nos deixasse pensar um pouco, de forma a decidir como é que nós íamos sair daquela situação já que sem as nossas chaves de casa nós não íamos ser capazes de abrir a porta de nossa casa. Nós ainda pensámos em deixar o equipamento do nosso filho em casa, mas depois questionámo-nos do modo como íamos entrar na nossa casa ao fim do dia.

Ficámos parados à porta do nosso prédio a pensar. De repente, encontrámos a solução para os nossos problemas: a porteira tem uma chave da casa! Esta solução deixou-nos muito contentes. Tocámos à campainha e, sorridente, a porteira abriu a porta e estendeu-nos a chave da nossa casa, depois de nós lhe termos contado esta aventura matinal.

Afinal nem tudo estava a correr mal no nosso começo de dia. Daí a pouco tempo, nós já estávamos novamente na rua, com o equipamento de ginástica do nosso filho e com as chaves da nossa casa, dirigindo-nos para o carro com o nosso filho pela mão.

Independent Condition

Introduction

O Departamento de Psicologia Social e das Organizações do ISCTE encontra-se a realizar um estudo sobre o modo como organizamos a informação que recebemos todos os dias, e como esta informação nos afeta pessoalmente.

Vamos pedir-lhe que trabalhe INDIVIDUALMENTE numa tarefa de procura de palavras.

Estudos anteriores mostraram que o desempenho das pessoas nesta tarefa era melhor quando realizada individualmente do que quando realizada em grupo.
Por esta razão, pedimos que realize esta tarefa INDIVIDUALMENTE.

Pedimos, então, que execute a tarefa que lhe propomos da melhor forma possível e que responda a todas as questões que lhe apresentamos com sinceridade. Neste questionário, não existem respostas certas ou erradas, ou respostas mais desejáveis ou menos desejáveis.

Muito obrigado pela sua colaboração

Task Instruction

Na tarefa que lhe propomos de seguida, vamos pedir-lhe para trabalhar INDIVIDUALMENTE. Para tal, deverá ler um texto e assinalar com um círculo todos os pronomes na primeira pessoa do singular que encontrar (por exemplo, EU, MEU, ME, MINHA, etc.).

Os dois primeiros exemplos estão já marcados no texto

«VIRE A PÁGINA POR FAVOR»

Pronoun-circling Task

Naquele dia tinha-me levantado cedo para levar o meu filho à escola antes da reunião. Vesti-me rapidamente, tomei o meu pequeno-almoço, e saí a correr de casa com o meu filho. Fui descendo as escadas, vestindo, ainda, o meu casaco. Estava um pouco em cima da hora para ir levar o meu filho à escola e para chegar à reunião. Naturalmente, eu estava um pouco nervoso. Não que a minha vida fosse ficar decidida naquele momento. Mas eu sabia que algo importante e positivo me podia acontecer nesta reunião…

Já tinha fechado a porta do meu prédio quando, por mero acaso, me apercebi de que não tinha posto o equipamento da ginástica na mochila do meu filho. Pedi-lhe para esperar um pouco enquanto eu ia de novo a casa. Voltei para trás para abrir a porta do meu prédio e, de repente, lembrei-me de que não tinha as chaves da minha casa. "Que azar!", pensei eu. "E agora? O que vou eu fazer?". O pânico instalou-se na minha cabeça, olhei para o meu filho e ele perguntou-me o que se estava a passar. Pedi-lhe que me deixasse pensar um pouco, de forma a decidir como eu ia sair daquela situação já que sem as minhas chaves de casa eu não ia ser capaz de abrir a minha porta de casa. Eu ainda pensei em deixar o equipamento do meu filho em casa, mas depois questionei-me do modo como ia entrar na minha casa ao fim do dia.

Fiquei parado à porta do prédio a pensar. De repente, encontrei a solução para os meus problemas: a porteira tem uma chave da casa! Esta solução deixou-me muito contente. Toquei à campainha e, sorridente, a porteira abriu a porta e estendeu-me a chave da minha casa, depois de eu lhe ter contado esta aventura matinal.

Afinal nem tudo estava a correr mal no meu começo de dia. Daí a pouco tempo, eu já estava novamente na rua, com o equipamento de ginástica do meu filho e com as chaves da minha casa, dirigindo-me para o carro com o meu filho pela mão.

Individualism/Collectivism Scale	
Collectivism	Respeito as figuras de autoridade com as quais me relaciono. Para mim é importante a manutenção da harmonia dentro do meu grupo. A minha felicidade depende da felicidade dos outros. Ofereceria o meu lugar num autocarro a um professor meu. Respeito as pessoas que são modestas consigo próprias. Sacrificaria o meu interesse próprio em benefício do interesse do meu grupo. Penso, por vezes, que a minha relação com os outros é mais importante do que os meus objetivos pessoais. Devo levar em consideração os conselhos dos meus pais, quando se trata de planear a minha educação ou a minha carreira. É importante para mim respeitar as decisões tomadas pelo meu grupo. Permanecerei no meu grupo se precisarem de mim, mesmo que eu não esteja muito contente com ele. Se os meus irmãos ou irmãs não forem bem sucedidos, sinto-me responsável por isso. Mesmo quando discordo totalmente dos membros do meu grupo, evito discussões.
Individualism (Continued in the next page)	Prefiro dizer “não” diretamente a ser mal entendido. Falar durante uma aula não parece ser um problema para mim. É importante para mim possuir uma imaginação fértil. Sinto-me bem quando me fazem elogios ou recebo prémios. Sou a mesma pessoa em casa ou na escola. Ser capaz de tomar conta de mim próprio é uma preocupação importante para mim. Comporto-me sempre da mesma maneira, independentemente da pessoa com quem esteja. Sinto-me à vontade com a utilização do nome próprio de uma pessoa logo após a ter conhecido, mesmo que seja uma pessoa mais velha do que eu.

Individualism (Continuation)	Prefiro ser direto e franco quando estou a lidar com uma pessoa que acabo de conhecer. Gosto de me sentir único e diferente dos outros em diversos aspetos da vida. A minha identidade pessoal, independente dos outros, é muito importante para mim. Acima de tudo, valorizo o facto de me sentir saudável.

Appendix B

34 neutral faces + 2 (training)

Appendix C

12 behaviours with the trait explicitly stated

Sentences
É artística então faz esculturas com materiais diversos. Expôs os seus trabalhos de escultura numa galeria importante.
Ela é curiosa por isso procurou informação sobre aquela espécie de cão estranha que viu passar na rua. Mesmo em criança perguntou de onde vêm as estrelas.
Sendo educada pediu autorização à professora para sair da sala. Quando a bibliotecária lhe entregou o livro, agradeceu.
É tão distraída que calçou meias de cores diferentes. Esqueceu-se da carteira no assento do metro.
É muito desastrada tanto que trazia o tabuleiro e deixou cair tudo no chão porque olhou para a mesa de trás. Entornou o café.
É insegura por isso teve medo de que as pessoas não gostassem do seu novo corte de cabelo. Pedia sempre aos colegas que confirmassem se estava a pensar e a fazer bem.
É tão confiante que acha que consegue lidar com a maioria dos problemas que lhe surgem. Foi ao concurso e, apesar de haver mais de mil participantes, estava certo de que ia ganhar.
Ele é trabalhador então apenas consegue ter dois dias livres de trabalho por mês. Quando chegou a casa pôs-se a estudar.
Sendo generoso pagou o almoço a todos os seus amigos. Deixou uma gorjeta de 10 euros ao empregado.
É tão cusco que controlou quem entrava e quem saía da casa dos vizinhos. Tentou ouvir a conversa da mesa do lado.
É irresponsável e deixou a irmã de cinco anos sozinha em casa. Chegou três horas atrasado a uma importante reunião.
Por ser ciumento ficava irritado sempre que a namorada recebia um telefonema de um colega de trabalho. Não quer que a namorada se dê com outros rapazes que não ele.

12 behaviours with implicit traits

Sentences	Trait
Utiliza produtos ecológicos. Participa em acções de limpeza de praias e matas.	Ecológica
Deixou de ir a três festas para se preparar para o exame de química. Tirou notas elevadas nos exames finais.	Estudiosa
Achou que não merecia o prémio e o louvor que recebeu. Atribuiu o mérito ao grupo, quando foi ela que encontrou a solução para o problema.	Humilde
Perguntou três vezes à recepcionista se faltava muito para ser atendida. Saiu da secretaria antes de ser atendida.	Impaciente
Não conseguiu exprimir uma ideia de forma compreensível. Mostrou enorme dificuldade em contar em poucas palavras uma história simples	Confusa
Não pediu desculpas ao Pedro pelo que lhe disse. Apesar de ter percebido que aquele não era um bom sítio para fazer a festa não deu o braço a torcer.	Orgulhosa
Viajou pelo mundo sozinho de mochila às costas. Mergulhou em alto mar para ver tubarões.	Aventureiro
Leu com enorme facilidade um tratado de lógica. Seguidamente, resolveu com facilidade um complicado problema matemático.	Inteligente
Devolveu o dinheiro do troco em excesso. Devolveu também uma carteira que encontrou com todo o dinheiro dentro.	Honesto
Não foi acampar com os seus amigos porque não gostava de aranhas. Também não foi ao Jardim Zoológico com a família porque tinha receio que algum animal fugisse da jaula.	Medroso
Foi consertar uma instalação eléctrica com as mãos molhadas. Acendeu um fósforo para ver se havia uma fuga de gás.	Estúpido
Criticou violentamente o desempenho profissional de um colega. Viu que o casaco da colega tinha caído das costas da cadeira e não fez nem disse nada.	Antipático

10 neutral behaviours

Sentences
Consultou a sua agenda para ver um número de telefone. Telefonou a um amigo e deixou-lhe um recado urgente no gravador.
Estacionou o automóvel perto de casa. Tirou a chave do bolso para abrir a porta.
Levantou-se depois das onze horas da manhã, naquele Domingo. Olhou para o relógio para ver as horas.
Naquele dia levou consigo o guarda-chuva. No caminho para o emprego comprou uma revista.
Saiu para comprar uma peça de roupa. Esteve, naquela manhã, três quartos de hora à espera do autocarro.
Saiu de casa para tomar uma bica e comer um pastel de nata. Leu com atenção a secção desportiva de um semanário.
Deu um passeio durante a tarde. Abriu a caixa do correio e retirou a correspondência.
Chamou o empregado e fez o seu pedido. Tomou uma bebida à refeição.
Consultou a lista telefónica para ver um endereço. Informou o taxista para onde queria ir.
Comeu um bitoque com batatas fritas ao almoço. Preferiu uma peça de fruta, em vez de um doce.

Appendix D

Anagram task

Anagram	Correct Answer	Anagram	Correct Answer
AZNO	zona	GOE	ego
OIAR	raio	IPSDICNAIL	disciplina
COIZN	zinco	RIRLBA	barril
VACE	cave	GREOP	prego
AZREB	zebra	AMCCOA	macaco
LORF	flor	IPAPCO	pipoca
ZAAR	azar	MRECE	creme
CAASOC	casaco	TSELERA	estrela
RAALAJN	laranja	ROAOC	coroa
PLARCEE	alperce	NPEA	pena
ACNA	cana	MBE	bem
OTLE	lote	RCSOA	rosca
ILNAOASTG	nostalgia	PTOME	tempo
IOT	tio	GOOJ	jogo
TEANAC	caneta	LAAS	sala
SAA	asa	UAR	rua
OLS	sol	SAOR	rosa
UAL	lua	SASAM	massa
ANNABA	banana	NOPA	pano
ZVO	voz	OGFLHONI	golfinho
NISO	sino	XORO	roxo
HOOL	olho	GAAV	vaga
XIELA	xaile	SAOMC	mosca
APAC	capa	EEEMLANTR	elementar

Appendix E

Study 1 Instructions

Welcome

Bem vindo/a a este estudo!
Aguarde pela indicação da experimentadora para dar início ao estudo.
Carregue na barra de espaço para começar.

Exposure Instructions

Um dos aspetos mais interessantes da cognição humana é a capacidade de recordar muita informação. Este estudo pretende investigar como o fazemos.
Em seguida irá ver pares de fotografias e frases. Os pares serão apresentados automaticamente pelo computador.
Por favor leia as frases com atenção e tente recordar a que fotografia correspondem. Tente também memorizar as frases com o maior detalhe possível. No final iremos fazer-lhe perguntas acerca desta informação.
Por favor carregue na "barra de Espaço" para começar.

Filler Instructions

Irá agora realizar uma tarefa na qual procuramos explorar o modo como percebe e extrai informação. Na tarefa irá ver letras que constituem diversas palavras Portuguesas mas que se encontram baralhadas. Tente resolver o máximo possível de palavras em 5 minutos.

Escreva a sua reposta usando o teclado e finalize carregando em Enter.

Recognition Instructions

Iremos agora pedir-lhe para recordar as frases que leu no inicio deste estudo. Irá voltar a ver as fotografias mas agora acompanhadas por uma única palavra. A sua tarefa é decidir se essa palavra estava nas frases que acompanhavam a fotografia.
Carregue na "tecla L/D" marcada com um autocolante verde se a palavra se encontrava nas frases, carregue na "tecla D/L" marcada com um autocolante vermelho caso não se encontrasse.

Por favor responda o mais rápido e corretamente possível.
Vamos começar com dois ensaios de treino antes de dar início à tarefa.
Por favor carregue na “barra de Espaço” para começar.

(After the 2 practice trials)

Se tiver alguma dúvida chame a experimentadora.
Se não tiver dúvidas, pode dar início à tarefa.
Carregue na "barra de espaços" para começar.

Study End

Chegámos ao final do estudo.
Queríamos apenas colocar-lhe três questões finais.
Por favor carregue na Barra de Espaços.

Conhecia alguma das pessoas apresentadas nas fotos?
Carregue em S para "sim"
Carregue em N para "não"
Carregue em T para "talvez, não estou seguro/a"

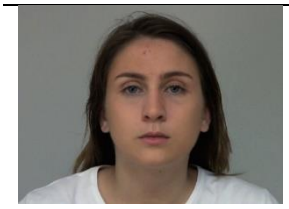
Já tinha participado em algum estudo semelhante a este?
Carregue em S para "sim"
Carregue em N para "não"
Carregue em T para "talvez; não me lembro"

Qual pensa ser o objetivo do presente estudo?
Use o teclado para dar a sua resposta.

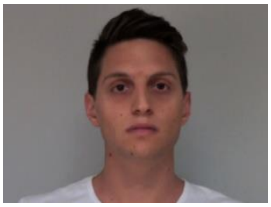
Muito obrigada pela sua participação!

Appendix F

12 Photo – behaviour pairs with Explicit traits

Photo	Sentences
	É artística então faz esculturas com materiais diversos. Expôs os seus trabalhos de escultura numa galeria importante.
	Ela é curiosa por isso procurou informação sobre aquela espécie de cão estranha que viu passar na rua. Mesmo em criança perguntou de onde vêm as estrelas.
	Sendo educada pediu autorização à professora para sair da sala. Quando a bibliotecária lhe entregou o livro, agradeceu.
	É tão distraída que calçou meias de cores diferentes. Esqueceu-se da carteira no assento do metro.
	É muito desastrada tanto que trazia o tabuleiro e deixou cair tudo no chão porque olhou para a mesa de trás. Entornou o café.
	É insegura por isso teve medo de que as pessoas não gostassem do seu novo corte de cabelo. Pedia sempre aos colegas que confirmassem se estava a pensar e a fazer bem.
	É tão confiante que acha que consegue lidar com a maioria dos problemas que lhe surgem. Foi ao concurso e, apesar de haver mais de mil participantes, estava certo de que ia ganhar.

Ele é trabalhador então apenas consegue ter dois dias livres de trabalho por mês. Quando chegou a casa pôs-se a estudar.



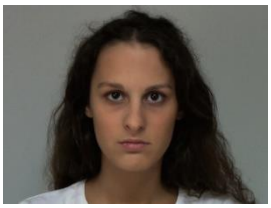
Sendo generoso pagou o almoço a todos os seus amigos. Deixou uma gorjeta de 10 euros ao empregado.

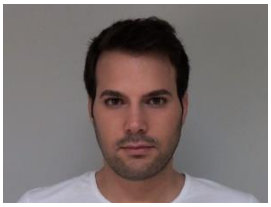
É tão cusco que controlou quem entrava e quem saía da casa dos vizinhos. Tentou ouvir a conversa da mesa do lado.

É irresponsável e deixou a irmã de cinco anos sozinha em casa. Chegou três horas atrasado a uma importante reunião.

Por ser ciumento ficava irritado sempre que a namorada recebia um telefonema de um colega de trabalho. Não quer que a namorada se dê com outros rapazes que não ele.

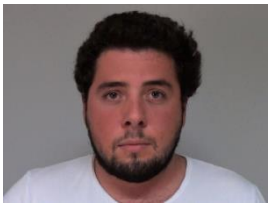
12 Photo – behaviour pairs with Implicit traits

Photo	Sentences
	Utiliza produtos ecológicos. Participa em ações de limpeza de praias e matas.
	Deixou de ir a três festas para se preparar para o exame de química. Tirou notas elevadas nos exames finais.
	Achou que não merecia o prémio e o louvor que recebeu. Atribuiu o mérito ao grupo, quando foi ela que encontrou a solução para o problema.
	Perguntou três vezes à rececionista se faltava muito para ser atendida. Saiu da secretaria antes de ser atendida.
	Não conseguiu exprimir uma ideia de forma compreensível. Mostrou enorme dificuldade em contar em poucas palavras uma história simples
	Não pediu desculpas ao Pedro pelo que lhe disse. Apesar de ter percebido que aquele não era um bom sítio para fazer a festa não deu o braço a torcer.
	Viajou pelo mundo sozinho de mochila às costas. Mergulhou em alto mar para ver tubarões.



Leu com enorme facilidade um tratado de lógica. Seguidamente, resolveu com facilidade um complicado problema matemático.

Devolveu o dinheiro do troco em excesso. Devolveu também uma carteira que encontrou com todo o dinheiro dentro.



Não foi acampar com os seus amigos porque não gostava de aranhas. Também não foi ao Jardim Zoológico com a família porque tinha receio que algum animal fugisse da jaula.

Foi consertar uma instalação elétrica com as mãos molhadas. Acendeu um fósforo para ver se havia uma fuga de gás.

10 neutral photo – behaviour pairs

Photo	Sentences
	Consultou a sua agenda para ver um número de telefone. Telefonou a um amigo e deixou-lhe um recado urgente no gravador.
	Estacionou o automóvel perto de casa. Tirou a chave do bolso para abrir a porta.
	Levantou-se depois das onze horas da manhã, naquele Domingo. Olhou para o relógio para ver as horas.
	Naquele dia levou consigo o guarda-chuva. No caminho para o emprego comprou uma revista.
	Saiu para comprar uma peça de roupa. Esteve, naquela manhã, três quartos de hora à espera do autocarro.
	Saiu de casa para tomar uma bica e comer um pastel de nata. Leu com atenção a secção desportiva de um semanário.
	Deu um passeio durante a tarde. Abriu a caixa do correio e retirou a correspondência.

Chamou o empregado e fez o seu pedido. Tomou uma bebida à refeição.

Consultou a lista telefónica para ver um endereço. Informou o taxista para onde queria ir.

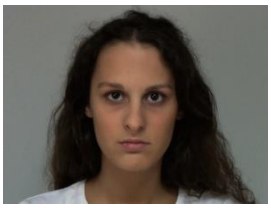
Comeu um bitoque com batatas fritas ao almoço. Preferiu uma peça de fruta, em vez de um doce.

Appendix G

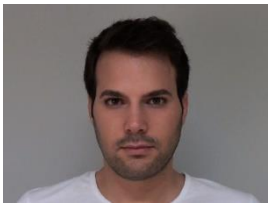
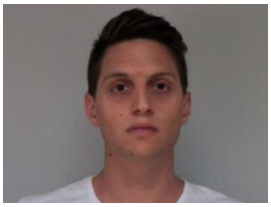
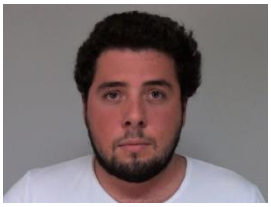
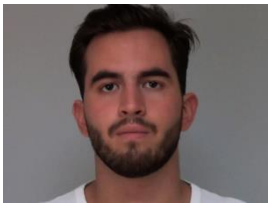
2 Practice trials

Photo	Trait	Correct Answer
	Pacífica	“No”
	Preguiçoso	“No”

Recognition task

Photo	Trait Shown	Exposure Trait	Correct Answer
	Artística	Artística	“Yes”
	Insegura	Ecológica	“No”
	Estudiosa	Estudiosa	“No”
	Irresponsável	Curiosa	“No”
	Humilde	Humilde	“No”
	Medrosa	Educada	“No”
	Impaciente	Impaciente	“No”

	Ecológica	Distraída	“No”
	Educada	Confusa	“No”
	Desastrada	Desastrada	“Yes”
	Orgulhosa	Orgulhosa	“No”
	Confiante	Insegura	“No”
	Aventureiro	Aventureiro	“No”
	Confuso	Confiante	“No”
	Trabalhador	Trabalhador	“Yes”

	Antipático	Inteligente	“No”
	Distraído	Honesto	“No”
	Generoso	Generoso	“Yes”
	Cusco	Cusco	“Yes”
	Curioso	Medroso	“No”
	Inteligente	Irresponsável	“No”
	Estúpido	Estúpido	“No”
	Honesto	Antipático	“No”

	Ciumento	Ciumento	“Yes”

Appendix H

Scale Translation

Translation of Singelis et al. (1995) Culture Orientation Scale	
Vertical Individualism (VI)	Fico angustiado/a quando alguém é mais bem-sucedido do que eu. É impossível ter uma boa sociedade sem competição. Fico indignado/a quando outras pessoas têm melhor desempenho que eu. É importante que o meu trabalho seja melhor do que o dos outros. Gosto de trabalhar em situações que envolvem competição com outros. A competição é uma lei da natureza. Ganhar é tudo. Para algumas pessoas o importante é vencer, esse não é o meu caso.
Vertical Collectivism (VC)	As crianças devem ser ensinadas a colocar o dever à frente do prazer. Devemos manter os nossos pais connosco quando envelhecerem. Seria capaz de sacrificar uma atividade da qual gosto muito se a minha família não a aprovasse. Normalmente sacrifico os meus interesses em benefício do meu grupo. Detesto ter de discordar dos outros no meu grupo de trabalho. Os filhos devem sentir-se honrados se os pais receberem um prémio importante. Faria qualquer coisa para agradar à minha família mesmo que detestasse essa atividade. Antes de fazer uma viagem longa, peço opiniões a familiares e amigos.

Horizontal Individualism (HI)	O que me acontece só a mim me diz respeito. Gosto da minha privacidade. Prefiro ser direto/a e honesto/a do que discutir com outras pessoas. Sou um indivíduo único. Deve-se viver a vida de forma independente dos outros. Costumo fazer "as minhas próprias coisas". Gosto de ser único/a e diferente dos outros de várias maneiras. Quando tenho sucesso, geralmente é por causa das minhas capacidades.
Horizontal Collectivism (HC)	Fico orgulhoso/a quando um/a colega de trabalho ganha um prémio. A minha felicidade depende muito da felicidade das pessoas à minha volta. Se um familiar estivesse com dificuldades financeiras, gostaria de ajudar dentro das minhas possibilidades. Gosto de partilhar pequenas coisas com os meus vizinhos. O bem-estar dos meus colegas de trabalho é importante para mim. Para mim, diversão é passar tempo com outras pessoas. Sinto-me bem quando coopero com os outros. É importante manter a harmonia dentro do grupo.

Appendix I

Study 2 Instructions

Welcome

Bem vindo/a ao estudo!

Informed Consent

O seguinte documento fornecer-lhe-á informação acerca deste estudo online de modo a ajudá-lo/a a decidir se deseja ou não participar no mesmo. Este estudo está a ser efetuado no âmbito da dissertação de mestrado em Psicologia das Relações Interculturais no ISCTE-IUL. A sua participação é voluntária e poderá desistir em qualquer momento sem qualquer penalização. Este estudo é completamente anónimo e em caso algum serão identificadas as respostas individuais dos/as participantes.
Neste estudo será pedido que preste atenção a pares de fotos e frases sobre as quais posteriormente lhe serão feitas perguntas. A duração deste estudo não deverá ser mais de 20 minutos. Como este estudo é acerca de memória pedimos-lhe que durante a sua duração mantenha a sua atenção focada no mesmo. Quando o terminar será apresentada uma declaração de esclarecimento e poderá deixar um comentário no próprio questionário ou contactar a investigadora por e-mail.
Se tiver alguma questão relativamente ao estudo não hesite em contactar:
Ana_Isabel_Moreira@ISCTE-IUL.pt

Demographics

Possui nacionalidade Portuguesa (condição eliminatória)?

Por favor indique qual o seu sexo.

Por favor indique qual a sua idade.

Por favor indique qual o seu grau de formação académica.

Value Scale Instructions

Em seguida irá ver algumas afirmações às quais lhe será pedido que responda o quanto acha que se aplicam a si numa escala de "1" a "7". Sendo que "1" corresponde a "Discordo Totalmente" e "7" a "Concordo Totalmente".

Exposure Instructions

Em seguida irá ver pares de fotografias e frases. Os pares serão apresentados automaticamente pelo computador.
Por favor leia as frases com atenção e tente recordar a que fotografia correspondem. Tente também memorizar as frases com o maior detalhe possível. No final iremos fazer-lhe perguntas acerca desta informação portanto pedimos-lhe por favor que não mude de página.

Filler Instructions

Irá agora realizar uma tarefa na qual procuramos explorar o modo como percebe e extrai informação. Na tarefa irá ver letras que constituem diversas palavras Portuguesas mas que se encontram baralhadas. Tente resolver o máximo possível de palavras em 5 minutos.

Recognition Instructions

Iremos agora pedir-lhe para recordar as frases que leu no inicio deste estudo. Irá voltar a ver as fotografias mas agora acompanhadas por uma única palavra. A sua tarefa é decidir se essa palavra estava nas frases que acompanhavam a fotografia.
Carregue na "tecla L" se a palavra se encontrava na frase, carregue na "tecla D" caso não se encontrasse.
Por favor responda o mais rápido e corretamente possível.
Vamos começar com dois ensaios de treino antes de dar início à tarefa.

(After the 2 practice trials)

Iremos agora iniciar a tarefa de memória. Por favor tente recordar-se das frases que leu no início deste estudo. Irá voltar a ver as fotografias mas agora acompanhadas por uma única palavra. A sua tarefa é decidir se essa palavra estava nas frases que acompanhavam a fotografia.

Carregue na “tecla L” se a palavra se encontrava na frase, carregue na “tecla D” caso não se encontrasse.
Por favor responda o mais rápido e corretamente possível.

Study End

Chegámos ao final do estudo.
Queríamos apenas colocar-lhe três questões finais.

Conhecia alguma das pessoas apresentadas nas fotos?

Já tinha participado em algum estudo semelhante a este?

Qual pensa ser o objetivo do presente estudo?

Debriefing

Muito obrigada pela sua participação neste estudo. Apesar de termos dito o estudo é acerca de memória, na realidade o seu propósito é estudar como se formam inferências implícitas.
Devido à natureza das mesmas era necessário não identificar o real propósito do mesmo.
Mais uma vez agradecemos a sua participação.
Caso necessite de qualquer esclarecimento não hesite em contactar
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