Escola de Ciências Sociais e Humanas

Politicians in Space: Spatial Grounding of Politics.

Ana Rita Boino Godinho Alves Farias

A Dissertation presented in partial fulfillment of the requirements for the Degree of

Doctor of Psychology

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September, 2013

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“Each of us contributes to advancing our mission; and when we do so together, we make the never-dreamed-possible a reality and we change the history.”

William S. Middleton

Dean of the University of Wisconsin (1890-1975)

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Resumo / Abstract

A presente investigação examina a ancoragem espacial dos conceitos políticos abstractos de *esquerda* (socialismo) e de *direita* (conservadorismo) e como esta representação espacial afecta o processamento de estímulos políticos. Teoricamente, este projeto apoia-se em abordagens emergentes que enfatizam a importância das experiências sensório-motoras no pensamento abstracto (e.g., Barsalou, 1999; Lakoff & Johnson, 1999), nomeadamente a relevância do espaço físico (dimensões vertical / horizontal) na ancoragem dos conceitos abstractos (e.g., ver Semin, Garrido, & Palma, 2012, 2013b para revisão). Os primeiros três estudos que reportamos indicam que a percepção, recordação e categorização de fotografias de políticos é sistematicamente distorcida de acordo com a posição espacial implícita da sua filiação partidária. Isto independentemente das preferências políticas mas dependente do conhecimento político dos participantes. Um segundo conjunto de dois estudos explora uma explicação alternativa dos resultados nomeadamente a emergência de efeitos de compatibilidade. Os resultados indicam que o processamento visual e auditivo de palavras relacionadas com política é facilitado quando estas são apresentadas em localizações espaciais congruentes independentemente da compatibilidade estímulo-resposta, nomeadamente quando a mão, tecla e tipo de resposta são espacialmente ortogonais à dimensão horizontal. Os três estudos finais documentam a ancoragem espacial de conceitos políticos e indicam a convergência multimodal das suas representações simbólica, visual e auditiva. O presente programa de investigação apresenta um novo olhar sobre a ancoragem de conceitos abstractos, mostrando nomeadamente a importância do espaço (e alguns moderadores) na ancoragem de estímulos políticos (linguísticos e não-linguísticos) em diferentes tarefas cognitivas e em modalidades sensoriais distintas.

Palavras chave: conceitos abstractos; ancoragem espacial; multimodalidade; política.

The research in this thesis examines the spatial grounding of abstract political concepts associated with left (socialism) and right (conservatism) political orientations and how such spatial representation affects the processing of politics-related stimuli. The conceptual framework adopted here derives from recent approaches emphasizing the significance of sensorimotor experience in grounding abstract thought (e.g., Barsalou, 1999; Lakoff & Johnson, 1999), namely the relevance of physical space (vertical / horizontal dimensions) in grounding abstract concepts (see Semin, Garrido, & Palma, 2012, 2013b, for reviews). The first three experiments reported here indicate that perception, recall and categorization of politicians' photos were systematically distorted in line with the spatial position implied by their party membership, irrespective of participants' political preference but when their political awareness is high. The second set of two studies explores an alternative account of our previous findings namely stimulus-response compatibility effects. Results indicate that processing of visually and auditorily presented politics-related words is facilitated in congruent spatial locations, regardless of stimulus-response compatibility, namely when the key, hand and label used to provide the response were spatially orthogonal to the horizontal dimension. The final three studies further document the spatial grounding of abstract political concepts and indicate the multimodal convergence of their symbolic visual and auditory representations. The current research program brings new visions to the grounding of abstract concepts, namely by showing the significance of space (aside from some moderators) in grounding linguistic and non-linguistic political stimuli, across different cognitive tasks and semantic, visual and auditory modalities.

Keywords: abstract concepts; spatial grounding; multimodality; politics.

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CHAPTER ONE:

GROUNDING CONCEPTS

> "The soul attains virtue when it is purified from the body: He [the philosopher] who has got rid, as far as he can, of eyes and ears and, so to speak, of the whole body, these being in his opinion distracting elements when they associate with the soul hinder her from acquiring truth and knowledge - who, if not he, is likely to attain to the knowledge of true being?"
>
> Plato, *Phaedo*, 65e-66a

The discussion about what "true" knowledge is and how it is acquired is a classic debate, a debate that has disregarded the role of the body in cognition. The denial of the role played by our body in knowledge acquisition dates back to early western philosophers (e.g., Plato), for whom the body and its "distracting elements" constituted an obstacle to the acquisition of the truth (Semin, Garrido, & Farias, 2013a). Similar views can be found in Cartesian philosophy (e.g., Descartes, 1641) that clearly separated the mind from the body. This disembodied view of cognition, with a few exceptions (cf., Bartlett, Dewey, James, Mead and Vygotsky) has been dominant throughout the whole history of psychological science.

The cognitive information processing approach stands out among these amodal views, which has largely influenced psychological theory and research to date (see Garrido, Azevedo, & Palma, 2011, for a review). In the late fifties, the cognitive science framework advanced what would become a classic analogy between higher cognitive functions and computer operations. According to this framework, knowledge consists of abstract and amodal symbols that "translate" sensory, motor and introspective states. Cognitive structures and processes are compared to computer architectures and operations running "scripts" that were disconnected from contextual influences.

The drawback of ignoring the constraints imposed by context on cognition was recently acknowledged by the situated cognition 'movement' (e.g., Smith &

Semin, 2004, 2007; Semin & Smith, 2008, 2013). This new approach, "rescripts" the classic cognitive perspective by emphasizing the modal nature of cognition and the significance of the contexts in which cognitive activity takes place (see Semin, et al., 2012, 2013b, for overviews).

The present research program is framed in terms of one of the key assumptions of situated cognition namely the acknowledgement of the role of sensorimotor processes in grounding knowledge acquisition, representation, and use. The idea that cognition is *embodied*, suggests that cognitive processes develop in the body's interaction with the world and are grounded in perceptual and sensorimotor modalities (e.g., Barsalou, 1999, 2008; Glenberg & Robertson, 2000; Prinz, 2002).

Specifically, embodied accounts of cognition suggest that knowledge is grounded in multiples ways including simulations, situated action and bodily states. During the process of experiencing an object or an event the brain captures this experience across the modalities (e.g., visual, auditory, proprioceptive) and integrates it in a multimodal representation in memory. At any later point in time, when we need to represent the object or event, we (partially) reenact the perceptual, motor, and introspective multimodal states activated during those experiences (e.g., Barsalou, 2008; Barsalou, Niedenthal, Barbey, & Ruppert, 2003; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). In other words, we simulate the multimodal representation experienced through primary sensorimotor systems in our interactions with an object or during an event.

The significance of sensorimotor grounding has captured attention of a variety of disciplinary perspectives in cognitive sciences (e.g., Barsalou, 1999; 2008, Decety & Grèzes, 2006; Glenberg, 2008; Semin & Smith, 2008; Zwaan & Radvansky, 1998). Currently, the idea that thinking is not driven exclusively by symbols and that cognitive processes are grounded in the same systems employed by perception and action has become a flourishing field of theory, debate and has led to a considerable amount of innovative empirical research giving rise to a new set of assumptions about how psychological and emotional processes develop (see Semin, et al., 2013a for a review).

Notably, this view of cognition finds support in several studies documenting the link between conceptual information and sensorimotor processes, both at

behavioral (e.g., Borghi, 2005; Borghi, Glenberg, & Kaschak, 2004; Glenberg & Kaschak, 2002, Kaschak & Glenberg, 2004; Matlock, 2004; Spivey, Tyler, Richardson, & Young, 2000; Stanfield & Zwaan, 2001) and neuroscientific levels (e.g., Buccino, Riggio, Melli, Binkofski, Gallese, & Rizzolatti, 2005; Collins, Pecher, Zeelenberg, & Coulson, 2011; Hauk, Johnsrude, & Pulvermüller, 2004; Tettamanti, Alkadhi, Moro, Perani, Kollias, & Weniger, 2005).

However, while the link between concrete concepts and sensorimotor experiences can be readily acknowledged, the way we represent, think, and communicate about abstract concepts that do not afford immediate sensorimotor experiences remains a rather challengıng questıon (cf. Barsalou, 2008; Boroditsky, 2000; Lakoff & Johnson, 1999). Nevertheless, previous studies have already documented that abstract concepts like "affect", "importance" or "morality" are grounded in physical concrete concepts such as temperature (e.g., Williams & Bargh, 2008), smell (e.g., Semin & Garrido, 2012), brightness (e.g., Meier, Robinson, & Clore, 2004), weight (e.g., Jostmann, Lakens, & Schubert, 2009), or physical cleanliness (e.g., Lee & Schwartz, 2010). Among these different developments, we are particularly interested in those showing that the way we think and communicate about abstract concepts can be influenced by the spatial information included in the representatıon of those concepts. This is the case of "affect" (e.g., Crawford, Margolies, Drake, & Murphy, 2006; Meier & Robinson, 2004), "power" (e.g., Shubert 2005) or time (e.g., Boroditsky & Ramscar, 2002; Lakens, Semin, & Garrido, 2011a), all of which are grounded spatially.

The main goal of the present work is to contribute to our understanding of how concepts are represented by extending the work on spatial grounding of abstract concepts to an almost unexamined domain: political concepts associated with left and right-wing political orientations. Specifically we will examine how political stimuli associated with left and right political orientations are grounded on the horizontal dimension, and how such spatial representation affects the processing of political information across a number of tasks tapping a variety of cognitive processes. Furthermore, our aim is also to explore the role of moderators in how spatial information shapes conceptual knowledge (see Landau, Meier, & Keefer, 2010 for a discussion). Finally, it is our goal to examine whether abstract concepts such as those

found in politics are grounded purely representationally, or visually and auditorily, or a combination of all three options in representing space.

In the remainder of Chapter One, we provide the general theoretical background that has guided our goals, hypotheses, and experimental work. In the next section of this chapter, we present the main views on modal and amodal grounding of concepts and we address the implications of these views for concrete and abstract concepts. Then we provide a brief historical overview of the emergence of the main political orientations as well as their current meaning and we advance a potential account for the emergence of the political left and right metaphor. Finally, we present a brief summary of the state of the art and we outline the goals and hypotheses that have driven the experimental work that is presented in the three subsequent empirical chapters.

In Chapter Two, we present three studies designed to examine whether the opposing political categories of left and right are spatially anchored on the horizontal dimension. We do so by using non-linguistic stimuli, namely photos of politicians, across different cognitive tasks. Our general hypothesis is that across the three experiments, photographs of politicians will be perceived, recalled and classified according to the spatial position implied by their party membership. We also examine the role of two moderators in the spatial grounding of political concepts, namely political preference and political awareness.

In Chapter Three, we present two studies that further test if politics related stimuli could be grounded on the horizontal space. Importantly, these studies were designed to test an alternative account of our previous findings namely stimulus-response compatibility effects (e.g., Fitts & Seeger, 1953) resulting from the convergence between the spatial nature of the concepts (political left / right) and the spatial labels of the response (left / right). With these experiments we examine whether our findings replicate when the responses are provided in a spatial dimension orthogonal to the horizontal one.

The last set of three studies, reported in Chapter Four, examines the grounding of abstract political concepts across two modalities (visual and auditory) as well as their symbolic representation. A comparison of the outcomes across these studies examines if the symbolic representation of political concepts and their visual and

auditory modalities is convergent. In other words, our goal is to examine if the spatial relationships between specific instances of the political categories overlaps across the symbolic, visual and auditory modalities.

Finally, in Chapter Five, we discuss the findings presented in the empirical chapters, namely the significance of those results for the specific goals and hypotheses in each section. Additionally, we identify the main limitations of our work and advance some possible experimental ways to overcome them. Finally, we present the main implications of our findings for the broader theoretical advancement of concept representation and introduce new ways for generalizing beyond this research to other concepts.

1.1. MODAL VERSUS AMODAL GROUNDING[1]

The emergence of the cognitive "revolution", in the second half of the twentieth century, represents one the most important hallmarks in the history of psychology. Within this approach both theory and research were guided by information processing as a theoretical and empirical metaphor for addressing cognitive processes (e.g., Garrido et al., 2011; Semin et al., 2012, 2013a, 2013b).

For decades, this was the dominant paradigm of cognitive sciences, which shaped theory and research about the nature of cognitive structures and processes. This paradigm stated that higher cognitive functions could be compared to the operations of a computer, namely the manipulation of abstract symbols on the basis of specific computations. Accordingly, mainstream theories of cognition postulate that knowledge consists of amodal symbols that transduce sensorimotor and introspective states (e.g., Fodor, 1975). In other words, representations in modal systems are transduced into amodal symbols that represent knowledge in semantic memory, in a way that is independent from the modal systems of perception, action and introspection (e.g., Barsalou, 1999, 2008; Barsalou, et al., 2003).

[1] Parts of this and the following two sections were taken from the chapter: Semin, G. R., Garrido, M. V. & Farias, A. R. (in press). How many processes does it take to ground a concept? In J. Sherman, B. Garownsky & Y. Trope (Eds.), *Dual process theories of the social mind*. New York, NY: Guilford Press.

Despite the past and current importance as well as the vitality of this approach in producing theory and research about cognitive structures and processes, some of its assumptions have recently been reconsidered and some findings have been revisited. Specifically we refer to the assumptions regarding the nature of cognitive representations and the contexts where information is acquired, stored and retrieved (e.g., Smith & Semin, 2004). In fact, situated cognition (e.g., Smith & Semin, 2007; Semin & Smith, 2013) presents an alternative view of cognition and cognitive processes suggesting that it is unlikely for the brain to process amodal symbols. Even if that is the case, they will nevertheless co-occur with modal representations in cognition.

One of the first arguments presenting a fundamental limitation in amodal representations was provided by Harnad (1990). Using a classic example of symbolic Chinese characters, he argued that is impossible to start learning a symbolic language without grounding it in some other non-symbolic domain. Harnad (1990) used the Chinese Room argument, an argument against the possibility of true artificial intelligence developed by Searle (1980). According to this thought experiment, an English monolingual is sitting on her own in a room. She has English instructions, which she follows to manipulate strings of Chinese characters in a way that a person sitting outside of the room assumed that the person in the room understands Chinese. The crux of the argument is that while properly programmed computers may talk a natural language but they will not be capable of understanding that language. This constitutes a challenge to adherents of artificial intelligence. Harnad expands this argument to the case of representational language suggesting that language production generated this way does not mean that real knowledge exists because it is impossible to learn a new language without grounding its symbols with a known context. Like a computer, every human can easily know the meaning of each symbol but that is completely different from language production, the production of the real and adapted speech. Years later embodied theories, acknowledged the same limitation and, theoretically and experimentally solved Harnad's problem (Semin et al., 2013a). The only way one can start learning the meaning of the symbol is by grounding it with something other than symbols in the same representational language.

However, the diversity of often non-intersecting interests in embodied cognition has inevitably led to multiple proposals towards the possible resolution of

the symbol-grounding problem. As Barsalou (2008) states: "Grounded cognition reflects the assumption that cognition is typically grounded in multiple ways, including simulations, situated action, and, on occasion, bodily states" (p. 11, 3). Not surprisingly, embodied cognition is addressed in very distinct ways. Some versions of embodied cognition emphasize simulation, namely the reactivation of perceptual, motor, and introspective states obtained when experiencing the world (e.g., Barsalou, 1999; Decety & Grèzes, 2006; Goldman, 2006). Other versions of embodied cognition emphasize situated action (e.g., Glenberg, 1997), namely that cognition is for the adaptive regulation of action (e.g., Smith & Semin, 2004). Others focus on the dynamic link between the abstract and the physical world (e.g., Lakoff & Johnson 1980; Tversky, Morrison, Franklin, & Bryant, 1999).

A common issue in all these approaches has been to address how concepts are grounded and whether concrete concepts such as car, book or cereal are grounded by the same processes that also ground concepts that are abstract, namely concepts about entities that we cannot touch, see, or smell such as freedom, love or morality. We shall address this issue in the next two sections while providing a brief overview of the evidence supporting the grounding of both concrete and abstract concepts.

1.2. CONCRETE CONCEPTS

Concrete concepts are easily distinguished from abstract concepts because they refer to physical entities, objects or events that are directly available to the senses. The same is not true for abstract concepts. This fundamental difference can easily explain why the embodied grounds of concrete concepts are easily acknowledged while the grounding of abstract concepts is often problematic and the subject of considerable debate.

They way concrete concepts are perceived, represented and retrieved has been addressed in several distinct ways, by different conceptual and methodological approaches briefly reviewed below (for a more complete review see Semin et al., 2013a). Importantly, both the evidence reported in cognitive (e.g., Borghi, 2005; Borghi, et al., 2004; Glenberg & Kaschak, 2002, Kaschak & Glenberg, 2004;

Stanfield & Zwaan, 2001) and neuropsychological studies (e.g., Hauk, et al., 2004) suggests that the neural substrate and cognitive mechanisms underlying the processing of concrete concepts are shared with those involved in perception and action.

One of the most prominent, current approaches to explain how concrete concepts are represented is provided by the Perceptual Symbol Systems theory – PPS (Barsalou, 1999). According to this model, simulation plays an important role in cognition. The brain captures concepts and events across different sensorimotor modalities. These multimodal states are stored in memory and used offline by (partial) simulation processes, that is, "the reenactment of perceptual, motor, and introspective states acquired during the interaction with the word, body, and mind" (Barsalou, 2008, p. 618).

Considerable evidence for sensorimotor grounding of concrete concepts has predominantly been obtained in language comprehension studies. For example, Spivey et al. (2000) have shown that while listening to spatial descriptions (e.g., "the top of a skyscraper" or "the bottom of a canyon") participants displayed upward or downward eye movements, respectively. Similar indicators of mental simulation are supported by the observation of faster reading times for sentences describing a plain terrain compared to those describing a rough terrain (Matlock, 2004). Others have also shown that semantic relatedness judgments of word pairs that retain iconic relations (e.g., *attic* presented above *basement*) are faster than when the icon relation is reversed (Zwaan & Yaxley, 2003).

One key argument derived from the simulation assumption is that concepts retain multimodal perceptual features of objects and that, consequently, conceptual processing involves the activation of modality-specific sensory brain areas (cf. Martin, 2007). This argument finds support in research demonstrating the costs incurred while switching from one modality to another during a property verification task. For example, Pecher, Zeelenberg, and Barsalou (2003) have shown that verifying a property in a modality (e.g., auditory: Blender – loud) after having verified a property in the same modality (e.g., Leaves – rustling) speeds the verification process. However, the verification process is slowed down significantly if it comes after having verified a property in a different modality (e.g., gustatory: Cranberry – tart). This and other studies (see also Marques, 2006; van Dantzig, Pecher, Zeelenberg, & Barsalou, 2008; Vermeulen, Niedenthal, & Luminet, 2007) investigating switching

costs in property verification provide supporting evidence for the assumption that perceptual simulation underlies conceptual processing. Further, subsequent studies (e.g., Collins et al., 2011) report that modality switching for visual property verifications are associated with increased N400 amplitude suggesting that the representation of concepts involves brain systems for perception and action.

Further evidence that a simulation process underlies conceptual processing can be found in the research examining the effects of visual perspective upon property verification (e.g., Borghi et al., 2004; Solomon & Barsalou, 2004; Wu & Barsalou, 2009). For instance, Borghi et al. (2004) observed that participants were faster in recognizing 'steering wheel' as a property of a car if they were experimentally induced to adopt an inside perspective (driving the car) compared to having an outside perspective (fueling the car). Other results from studies exploring the perceptual congruence between sentences and pictures (e.g., Stanfield & Zwaan, 2001) are regarded as further evidence that perceptual simulation underlies conceptual processing. For example, participants were faster and more accurate in judging whether an object displayed in a picture (e.g., a pencil in an horizontal position) was mentioned in a sentence preceding the picture when the visual features of the object overlap with the mental representation induced by the implied orientation of the object described in the sentence (e.g., John put the pencil in *the drawer*) (see also Connell, 2007; Pecher, van Dantzig, Zwaan, & Zeelenberg, 2009; van Dantzig, et al., 2008; Zwaan, Stanfield, & Yaxley, 2002 for evidence of the systematic interaction between perceptual and representational processes).

The claim that the meaning is grounded by the set of actions that can be undertaken in a situation (e.g., Glenberg, 2008) finds support in studies showing that the comprehension of an action depicted in a sentence is facilitated while performing a compatible action. For example, Borghi and colleagues (2004) observed, in a property verification task that participants' responses were faster when the part of the object location (e.g., roof of a car) were compatible with the required movement (e.g., upwards) to a "yes" response button. Similar compatibility effects were observed in studies involving sentence comprehension. The sensibility judgment of sentences describing transfer actions (e.g., giving or receiving an object) was facilitated when the response was performed by a compatible movement (e.g., either toward or away from the body respectively; Glenberg & Kaschak, 2002). Further, hand muscular

activity was found to be greater while reading concrete or abstract sentences describing transfer actions (compared to sentences that do not describe transfer; Glenberg, Sato, Cattaneo, Riggio, Palimbo, & Buccino, 2008). These and other results (e.g., Bub & Masson, 2010; Girardi, Lindemann, & Bekkering, 2010; Klatzky, Pellegrino, McCloskey, & Doherty, 1989; Masson, Bub, & Warren, 2008; Pezzulo, Barca, Bocconi, & Borghi, 2010; Taylor & Zwann, 2008; Zwaan & Taylor, 2006) are seen as providing evidence for the modulation of motor system activity during the comprehension of concrete (as well as abstract) language.

Finally, a large number of studies examining the interface between brain processes and language shed some additional light on how concrete concepts are neurally represented. These studies have shown, for example, that the pattern of brain activity (fMRI) observed while people read a number of action verbs (e.g., to lick, pick, or kick; Hauk et al., 2004) or listen to sentences describing actions performed with different body parts (e.g., Tettamanti et al., 2005) overlapped with the one that is activated by the actual movement. Related findings (Buccino et al., 2005) indicate that behavioral motor responses (e.g., hand, foot) are faster when listening to actions expressing consistent effectors actions. For example, participants were faster in responding to hand related sentences when the response was given with the hand than with the foot. Furthermore, listening to these sentences while transcranial magnetic stimulation (TMS) was applied to (hand / foot) specific motor areas induced different patterns of electrical activity recorded in correspondent effectors (legs or arms). These studies along with other evidence (e.g., Aziz-Zadeh, Wilson, Rizzolatti, & Iacoboni, 2006; Watkins, Strafella, & Paus, 2003) indicate the involvement of the motor system in processing action related sentences.

The different approaches that have been advanced regarding knowledge representation vary with respect to their reliance on the role of sensorimotor processes and can be placed on a continuum from purely disembodied accounts of cognition to purely embodied accounts (e.g., Wilson, 2002).

The claim advanced for the former position is that cognition is completely symbolic and amodal (e.g., Dennett, 1969, Fodor, 1975). The latter argue that cognition is completely grounded in the sensorimotor system (e.g., Barsalou, 1999).

And of course, there are theories both from philosophers (e.g., Dove, 2009, 2011; Machery, 2007, 2010) and neuroscientists (e.g., Mahon & Caramazza, 2008) that propose solutions that occupy the middle range on the continuum from purely 'embodied' to purely 'amodal and representational'.

Dove (2009), for instance suggests that the capacity to acquire semantic content that goes beyond perceptual experience reflects a fundamental design feature of human minds. According to him, the human conceptual system is characterized by a representational division of labor in which modal and amodal representations handle different aspects of our concepts (Dove, 2011).

Questioning the conclusiveness of neurophysiological studies as an unequivocal indication that amodal processes are not involved in cognition, Mahon and Caramazza (2008) advance an alternative model suggesting that the core of a concept is amodal or symbolic and sensorimotor information is an embellishment, namely "colors conceptual processing, enriches it, and provides it with a relational context" (Mahon & Caramazza, 2008, p. 10).

A somehow similar proposal (Language and Situated Simulation - LASS) is advanced by Barsalou, Santos, Simmons, and Wilson (2008; see also Simmons, Hamann, Harenski, Hu, & Barsalou, 2008; Solomon & Barsalou, 2004), suggesting that concepts are represented both in terms of linguistic representations and also in terms of sensorimotor simulations. Their joint operation contributes to the representation of concepts, with the former, linguistic system, assumed to induce superficial processing and the latter deeper conceptual processing via the simulation system.

According to Machery (2007) the critical question should not revolve around whether concepts are modal or amodal, but rather: "To what extent do we use reenacted perceptual representations in cognition and to what extent do we use amodal representations? (Machery, 2007, p. 42)." This he refers to as the 'scope' issue and is in part based on the argument that the embodiment findings cannot be generalized readily. This is particularly the case of the representation of abstract concepts like love, freedom or importance that arguably present interesting challenges to embodied approaches. We turn to abstract concepts and their grounding in the following section.

1.3. ABSTRACT CONCEPTS

A more substantial problem for embodied theories concerns the representation of abstract concepts that are less obviously accessible to perception or direct experience. We cannot, for example, taste "democracy" as we can "cereal". In fact, whereas the embodied grounds of concrete concepts representation are readily recognized, the way we represent, think, and communicate abstract concepts, such as democracy, that do not afford immediate sensorimotor experiences remains a challenge for embodied approaches to cognition (cf. Barsalou, 2008; Boroditsky, 2000). Conceptual Metaphor Theory – CMT; Lakoff & Johnson, 1999) has been often invoked to address this issue as illustrated in the section bellow.

1.3.1. Conceptual Metaphor Theory (CMT)[2]

According to the theory of conceptual metaphor (Lakoff & Johnson, 1999), non-linguistic mappings from the concrete source domain can be applied to the relatively abstract target domain. The central idea is that we commonly talk, and importantly, also think about relatively abstract domains (like time) in terms of more concrete domains (like space). Indeed, it seems as though spatial relations do provide structure for many abstract concepts and these "mental metaphors" (Casasanto, 2009) presumably help us to organize abstract concepts by mentally mapping a concept that we cannot easily perceive onto a concept more directly associated with perceptual or motor representations.

Conceptual metaphor theory has led to a wealth of demonstration experiments; in cognitive psychology as well as in social psychology (see Landau, et al., 2010) since abstract concepts abound in the social domain (affect, morality, power, etc.). In the following we provide an overview of the research inspired by the CMT. We first

[2] Parts of this section were taken from the chapter: Farias, A. R., & Garrido, M. V. (2011). Politicians in space: Spatial grounding of politics. In M. Roberto, M. Batista, M. H. Santos, R. Morais, R. Costa, & M. L. Lima (Eds.), *Research directions in social and organizational psychology* (vol. 4; pp. 13–21). Lisbon: Colibri.

review some research illustrating the link between abstract concepts and non-spatial physical domains such as temperature or physical cleanliness, and then we present empirical evidence on the link between abstract concepts, like power or time, that can be directly mapped in the concrete domain of space.

One of the most largely studied abstract concepts is affection. Based on the use of daily expressions such "a warm person" or a "cold relationship" several authors started to examine the relationship between affection and temperature. One of the first empirical demonstrations of such relationship was provided by Williams and Bargh (2008) who asked participants to hold a warm or a cold cup of coffee before receiving information about a hypothetical person described as *intelligent, skillful, industrious, determined, practical*, and *cautious*. When subsequently asked to provide their personality impression of this hypothetical person on several bipolar traits, participants that held a warm cup of coffee rated the target as warmer than those holding a cold cup of coffee. Further, participants in a warmer room (relative to a colder room) also reported higher social proximity to a target person (IJzerman & Semin, 2009) as indicated by their scores on the Inclusion of Other in Self-scale (IOS; Aron, Aron, & Smollan, 1992). The examination of metaphors such as "*icy stare"* and "*cold reception*", as indicators of social exclusion, have also indicated (Zhong & Leonardelli, 2008) that recalling a social exclusion experience led participants to estimate room temperature as lower than recalling an inclusion experience. Further, the induction of social exclusion through an online virtual interaction led participants to report greater desirability for warm foods and drinks. More recently, IJzerman and Semin (2010) have shown that inducing experiences of physical and verbal proximity gives rise to perceptions of higher temperature.

Semin and Garrido (2012) also report that environmental contexts characterized by warm temperature, close distance and pleasant smells promote generalized positive sociability evaluations. In the presence of these environmental conditions not only a social target but also uninvolved others, such as the experimenter, were rated as warmer, closer and more friendly, in contrast to the ratings observed in the cold, distant and unpleasant smell conditions.

Related lines of research explore the link between affect and other concrete domains such as size and brightness. For example, while exploring the link between affect and size, Meier, Robinson, and Caven (2008) observed that participants were

faster and more accurate in evaluating positive words presented in a large font than words presented in a small font, whereas the reverse pattern was true for negative words. The association between stimulus brightness and affect (e.g., "*Bright ideas*" or "*Dark days*") was reported by Meier et al., (2004), who observed that categorization was inhibited when there was a mismatch between stimulus brightness (e.g., light) and word valence (e.g., negative). The occurrence of automatic inferences about stimulus valence based on brightness was further supported by research indicating that squares are seen as lighter after the evaluation of positive than negative words (Meier, Robinson, Crawford, & Ahlvers, 2007). Recently, the significance of the metaphoric association between black and white and negativity and positivity was further specified. Across six experiments Lakens, Semin, and Foroni (2011b) have shown that if white ideographs are not presented in relation to black ones, then the anchoring of light and dark or white and black with good and bad respectively is not manifested. These results indicate that the metaphoric relationship between valence and brightness relies on the activation of the bipolar interdependence and does not emerge when such interdependence is absent.

Another metaphor that has recently been investigated is the link between the abstract concept of *morality* and activities to do with physical cleanliness (Lee & Schwartz, 2011). This association was first described by Zhong and Liljenquist (2006) who observed that participants who recalled past unethical behaviors (versus ethical) were more likely to generate more cleansing-related words, such as soap or shower, than participants who recalled ethical behaviors. Further, participants who copied an unethical story showed an increased desirability for cleansing products as compared to those copying the ethical story. Moreover, after recalling an unethical behavior 67% of the participants preferred to receive an antiseptic wipe than a pencil as a free gift, indicating the behavioral consequences of this linguistic association. Subsequent studies (e.g., Lee & Schwartz, 2010) further indicate that people are more likely to purify those specific body parts that are involved in the production of the moral transgression. Participants that were induced to perform an immoral action (lying) by using their months (using voice mail) rated the desirability of a mouthwash as higher while those performing the same action using e-mail preferred a hand sanitizer. The bidirectional nature of the metaphor that links cleanliness and morality was demonstrated by Schnall, Benton and Harvey (2008) who found that activating the

cognitive concept of cleanliness (e.g., pure, washed, clean, immaculate) influenced moral judgments such that they became less severe. Furthermore, after experiencing disgust, participants who engaged in cleaning behavior (e.g., washing one's hands) made less severe judgments of moral dilemmas than those who did not wash their hands after seeing a disgusting film clip.

The link between *importance* and *weight* has been investigated. Jostmann, et al., (2009) have shown that holding a heavy versus a light clipboard increased the judgments of the value of foreign currencies, as well as the perceived importance of fair decision-making procedures. Ackerman, Nocera, and Bargh (2010) subsequently report similar results namely that participants rate a job candidate as better (as well as their own accuracy on the task as more important) and as displaying a more serious interest in the position when the job application is provided on a heavy clipboard (vs. a lighter clipboard). Male participants holding a heavy clipboard also allocated more money to social issues.

Particularly relevant for our research are the findings derived from studies examining the grounding of abstract concepts in spatial dimensions as described below.

Empirical evidence investigating the relation between affect and verticality (cf. Crawford, 2009) supports the argument that metaphors referring to the vertical spatial orientation like "*I'm feeling up*" or "*I'm feeling down*" structure the way people think and represent affect-related concepts. For example, Meier and Robinson (2004) have shown that positive words (e.g., ethical, friendly) were classified more rapidly as positive when they were presented on the upper half rather than on the lower half of a monitor, while the opposite was true for negative words. The grounding of affect in vertical space was further demonstrated in studies showing that valence influences memory for the vertical locations of emotionally evocative stimuli (Crawford et al., 2006). These studies indicate that positive and negative images from the International Affective Picture System presented in various locations were biased upwards or downwards as a function of their positive or negative valence, respectively. Further, yearbook photos that were rated as positive were shifted upwards while those rated to be negative were shifted downwards. Recently, the link between valence and verticality was shown to be bidirectional. The results reported by Casasanto and Dijkstra (2010) indicate that participants who were asked to retell either positively or

negatively valenced memories while moving marbles either upwards or downwards retrieved memories faster and moved marbles at a higher rate when the direction of movement was congruent with the valence of the memory (i.e., upwards for positive memories, downwards for negative memories). Furthermore, the direction of repetitive motor actions also partly determined the emotional content of the memories that participants retrieved. After being provided with neutral-valence prompts (e.g., *Tell me about an event that happened yesterday*), participants retrieved more positive memories when instructed to move marbles upwards, and more negative memories when instructed to move them downwards. In two experiments, Palma, Garrido, & Semin (2011) have documented the role of the vertical spatial dimension in grounding memory for affectively charged social information about persons. Their results indicated that participants' recall of a target person's behaviors is superior for positive and negative target behaviors if target's positive and negative behaviors are presented in compatible vertical spatial locations (up or down respectively). Meier, Hauser, Robinson, Friesen, and Schjeldahl (2007) have shown that divine figures (i.e., God and Devil) are also anchored on a vertical dimension. Participants were significantly faster when words related to God (e.g., Almighty) and words related to up (e.g., ascendant) were to be classified together (the same for Devil related words when presented with down related concepts) than when words related to God had to be classified together with concepts related to 'down'. Participants were also faster to categorize God-related words when presented at the top (vs. bottom) of the screen, whereas the reverse was observed for Devil-related wor and their memory for the vertical location of God- and Devil-like images also showed a metaphor-consistent bias (up for God; down for Devil). This metaphorical relation also influenced memory and social judgments. Namely, participants remembered photographs related to God as appearing more on the top of the monitor (vs. Devil as appearing more on the bottom) when compared to neutral words and rated strangers as more likely to believe in God when their images appeared in a high versus low vertical position.

Different metaphoric references can also be found in the representation of someone with a *high* status or on *top* of the hierarchy or someone with a *low* status. These metaphorical references directly associate power with the vertical space. Drawing on embodied theories of cognition, Schubert (2005) has shown that the judgment of a group's power is influenced by the group's vertical position in space

and motor responses implying vertical movement. In a set of studies, the author shows that low or high spatial positions are associated with power. His research also indicates that that the judgment of a group's power is influenced by the group's vertical position in space and motor responses implying vertical movement. Importantly, the author also established that the influence of vertical position on power judgments is not driven by valence differences. In sum, the representation of power seems to involve the mental simulation of spatial relationships and can be inferred by perception of vertical differences – simply put, the placement of power categories in congruent spatial positions facilitates responses, whereas incongruent positioning of categories (powerful down and powerless up) on a vertical dimension hinders the response. The reverse was true for judgments of powerless groups.[3] However, recent research suggests that power is not simply structured in space in absolute terms, but that relational differences in power moderate the vertical representation of the powerful *above* the powerless (Lakens, Semin, & Foroni, 2012). In a set of experiments the authors observed that when both powerful and powerless groups were presented in the same experimental task (i.e., manipulating power *within* participants), the relative differences in power were salient and strengthened the vertical spatial structuring of power differences. However, when power was manipulated between participants (i.e., only powerful or powerless groups were presented), relative differences in power were absent in the experimental task, and the tendency to structure power differences in vertical space was not observed. Recent research conducted by Schubert, Schubert and Topolinski (2013) also indicates that the relationship between the vertical dimension and power is more complex than previously thought. In particular the authors examined (in a computer setting as well as actual encounters) the moderating role of additional verbal information about a target on the relation between spatial elevation and person perception. In line with previous findings, spatial elevation increased respect in a computer setting while liking towards the target was not affected. In an actual encounter the results reversed. These results suggest that specific moderators play an important role in the spatial grounding of power and draw our attention to potentially over‐simplified conclusions in the research reported in this domain.

[3] The metaphorical representation of power seems to also involve the dimension of physical size (e.g., Schubert, Walduzs, & Giessner, 2009) as illustrated by faster reactions times observed in judging a powerful group as powerful when written in larger font than when written in a smaller font.

The metaphoric representation of time constitutes one of the better-studied research domains with several studies showing the connection of the cognitive representation of time with the representation of space (e.g., a *short* break, a *long* vacation). In fact, our culture is abundant with spatial representations of time (e.g., clocks, sundials and hourglasses just to name a few) and our language is also full of examples that depict time, its order and duration with spatial references (Clark, 1999; Lakoff & Johnson, 1980). Experimental evidence for such a link derives from research showing that priming different spatial perspectives changes the interpretation and processing of time (e.g., Boroditsky, 2000; Boroditsky & Ramscar, 2002). Exploring expressions like "the past is behind" and "the future is ahead", Boroditsky (2000) has found that spatial priming consistent with either an ego-moving (the agent is moving in time), or a time-moving schema affects the interpretation of ambiguous temporal statements. When presented with statements such as "*The meeting that was scheduled for next Wednesday was moved forward two days"* over 70% of the participants in the study responded in a prime-consistent manner. Interestingly, while the spatial anchoring of time seems to be a general phenomenon the spatial referents that ground time vary considerably across cultures. Research to date has shown time to be represented front to back or back to front, right to left or left to right. For example, Fuhrman and Boroditsky (2010) found that whereas English speakers tend to arrange temporal sequences from left to right, the opposite is true for Hebrew speakers. Boroditsky and Gaby (2010) also report that Pormpuraawans (an Australian Aboriginal Community) arrange time according to *cardinal directions*. The left-past and the right-future spatial pattern observed in most western cultures is not a universal one but rather culture-specific, and in all likelihood shaped by writing-direction (e.g., Nachshon, 1985). When talking about time, people make spatial gestures to the left in the case of references to the past and to the right when referring to the future (e.g., Casasanto & Lozano, 2006; Núñez & Sweetser, 2006). Recent results by Blom and Semin (2013) confirm this spatial grounding by showing that hand-arm movements (HAMs) in relation to the architecture of the body (left or right axis) influence temporal judgments. Left HAMs to the left of the body lead the event to be perceived as more distant and right HAMs to the right of the body lead an event retrieved from memory to be perceived as closer in time. Others have shown that when asked to push a key on one side or the other in response to time-related stimuli (e.g., past, future), participants are faster when past stimuli appear on the left and future stimuli appear

on the right (e.g., Ishihara, Keller, Rossetti, & Prinz, 2008; Vallesi, McIntosh, & Stuss, 2011; Weger & Pratt, 2008). These compatibility effects between time-related stimuli and the spatial position (left or right) of response keys were also observed when participants categorize the temporal meaning of past and future words that were presented auditorily to the left or right ear (Ouellet, Santiago, Isreali, & Gabay, 2010; Ouellet, Santiago, Funes, & Lupiáñez, 2010; Santiago, Lupiáñez, Pérez, & Funes, 2007). Recently, Lakens and colleagues (2011a) demonstrated the visual-spatial anchoring of time, showing that past-related words (e.g., yesterday) were placed significantly to the left of the midpoint of a horizontal line while future-related words (e.g., tomorrow) were placed to the right of the midpoint. Further, when auditorily presented with past and future referent words with equal loudness to both ears, participants disambiguated future words to the right ear and past words to the left ear.

The use of the spatial polar opposites of left–right when thinking and talking about politics-related concepts may also constitute an instance of a linguistic metaphor. Indeed, there seems to be a clear association between the left / right political ideological opposites and left / right markers of the horizontal space. It is somewhat surprising how little research addresses the spatial representation of political orientations given the pervasiveness of left–rıght political labels in our language and culture. One of the two studies that we were able to find on the subject was conducted by Oppenheimer and Trail (2010) and suggests that when a left (right) orientation is induced physically then a somewhat stronger liberal (conservative) attitude is observed. Specifically, participants who were oriented to the left (e.g., by squeezing a hand-grip with the left hand; by sitting on a chair that tilted slightly to left; or by means of spatial priming task that implied clicking on an object more often presented on the left) reported more liberal political attitudes, then those spatialy oriented to the right. However, hand use, chair tilt or the spatial priming did not affect agreement with republicans, suggesting a somehow awkward conclusion that the spatial metaphor only influences the political attitudes towards democrats.

Other work suggests that reading political acronyms implicitly activates the spatial left–right associations (van Elk, Schie, & Bekkering, 2010). In a set of three studies the authors observed that participants were faster when classifying left-wing referent acronyms when instructed with a cue indicating a left-hand button press and vice versa for right-wing referent acronyms when preceded with a cue to respond with

a right-hand button press. However the interaction between the party and hand was only observed for right-wing parties in study 1 and for left-wing parties in studies 2 and 3. In a final study participants were faster responding with a right-hand single press when right-wing political acronyms were presented to the right (no interaction was observed for left-wing political acronyms). The work by van Elk et al (2012) also indicates that participants represent the political orientation of parties with respect to their own political preference. Correlational analysis between participants' political preference and the effect size of their results indicates that participants with a preference for right-wing parties showed a stronger effect for left-wing parties than did participants with a preference for left-wing parties. No relation was found between a participant's preference and the effect size for right-wing parties.

Overall the results of these studies, although not always consistent, present a very interesting relation between the political acronyms and space. Notably in these studies, the preparation of a button press with the left or the right hand was sufficient to facilitate the identification of acronyms referring to names of political parties, suggesting an overlap between the features required for representing acronyms referring to names of political parties and for making a left or right response (Experiments 1 to 3). In a similar fashion, when acronyms referring to names of political parties were presented to the left or the right side of the screen (Experiment 4), an overlap between the features "left" or "right" resulted in faster reaction times. This way the results are open to the possibility that the observed results could have been driven by stimulus-response congruence effect (SRC). The SRC was first reported by Fitts and Seeger (1953), based on the assumption that performance depends not only on the individual properties of the stimuli and responses but also on their relation. In the case of politics, these effects assume particular relevance because political orientation labels (of left and right) overlap with physical spatial labels (of left and right). Further, these studies examine the metaphor in mere classification tasks and exclusively with linguistic stimuli. As the authors recognized political cognition is a complex domain. Thus, more research is required to capture the multidimensional and multimodal nature of political information.

In the next section, we shall present a brief historical overview of political left and right orientations and how a spatıal metaphor may have emerged.

1.4. "SPATIAL" POLITICAL ORIENTATION

The spatial representation of politics may lend itself as a good example of metaphorical thought in the form of a symbolic dichotomy. Politics is frequently talked about using spatial referents and tags. In opposition to other abstract concepts like time with behavioral data suggesting that conceptual relations between space and time are not arbitrary and reflect a psychological reality that is more than "language deep" (e.g., Kranjec & McDonough, 2011) the link between space and political orientations presents a different interface that history may help to explain.

Before the end of the eighteenth century, the distinction between left and right already existed but other spatial distinctions (top/down – Height; near/distant - Distance) in the political space division occupied a more prominent role. Up to this date the King tended to occupy an elevated space relative everyone else (height) and was secluded from all, particularly the plebeians (distance) (Laponce, 1981). However to stand on the right of the King rather than on the left always symbolized more importance and power (Laponce, 1981).

The rearrangement of these three dimensions (height, distance and side) occurred for the first time in France around 1798. The French National Assembly was created and the space needed to be divided according with the constituents' support of the King's ideas. On the right of the King were seated the members supporting the King and on the left the members against the King's influence. At this point, this space division was created more in line with the symbolic and necessary space arrangements rather than to ideological bases.

Our political landscape has inherited this historical division with the result that socialism-related political parties are nowadays represented as left-wing and conservatism-related parties as right-wing in our language. [4]

[4] Note that we chose to refer to socialism and conservatism leaving liberalism out of the dichotomy. Liberalism can be seen as either closer to the right when emphasizing the relevance of property and market or to the left to emphasize the opposition to hierarchy and tradition typical of conservatism. Therefore right-wing can be conservative or liberal and left-wing can be socialist or liberal (Rosas, 2013).

The origin of the modern political dichotomy reflects the transformation of a spatial and symbolic division into an ideological division (Rosas, 2013). The influence of these ideological bases in parliamentary spatial arrangements appeared more structured only in the first decades of the ninteteen century (Gauchet, 1992). From the President's visual perspective left-wing parties, seated at the left hand side of the parliament, supported the radical changes introduced by the revolution, which included the implementation of a Republican political system and secularization. The right-wing parties, seated at the right hand side of the parliament supported the old regime and the maintenance of old institutionalized powers (monarchy, aristocracy and clergy). This left-right representation still prevails in some parliaments such as the European parliament. The basic reason for the current prevalence of the left-right dichotomy seems to be merely related to cognitive usefulness, as the concrete spatial dichotomy in seating arrangements permits the mental simplification of ideologies (Rosas, 2013).

Over the years, the labels of *left-wing*, *leftist* or *the Left* have become associated with a set of revolutionary movements in Europe, namely socialism, anarchism and communism, as well as social democracy and liberalism. Nowadays, left-wing ideals include references to workers' rights, empowerment, worries about plutocracy, opposition to unrestrained capitalism and a general support for social change with a view towards creating a more egalitarian society. In contrast, the categories of *right-wing*, *rightist* and *the Right* refer to views that subscribe to preserving a traditional social order, social stratification, compliance towards political groups including conservatives, libertarians, reactionaries, monarchists, aristocrats and theocrats, as well as those who support free market capitalism, and some forms of nationalism.

1.4.1. How is a Metaphor born?

"Metaphor [is a] figure of speech that implies comparison between two unlike entities, as distinguished from simile, an explicit comparison signaled by the words "like" or "as"." (Encyclopedia Britannica, 2013). This is the most common conception of metaphor, in scholarly circles but also in popular mind. However it is not the only view on metaphor.

A different approach about metaphors was provided by Lakoff and Johnson (1980), namely a cognitive and linguistic view. The ideas presented by these authors were not new, some philosophers, such as Locke and Kant, had already discussed the conceptual nature of metaphor, however Lakoff and Johnson were the first attempting to provide a comprehensive, generalized, and empirically tested theory. Their conceptualization of the study of metaphors has led to a substantial increase in research by cognitive scientists, because metaphor was identified as playing a major a role in human thought, understanding, and reasoning, and beyond that, in the creation of our social, cultural and psychological reality.

According to CMT repeated concrete experiences acquired in interaction with our physical environment are contained in *image schematic structures*, namely sensorimotor schemas. Abstract concepts are assumed to be structured by metaphoric mappings upon such concrete schemas. For instance, the abstract domain of time is assumed to arise from repeated associations between the spatial experience of moving from a source location (past) to a goal location (future), resulting in the metaphor that 'time is motion'. In this view, the meaning of abstract concepts is grounded upon basic image schemas acquired over sensorimotor experiences.

The assumption that political stimuli are mapped upon horizontal space could in principle be cast within the framework of *Conceptual Metaphor Theory* (CMT, Lakoff & Johnson, 1980; 1999). Politically laden concepts such as left and right are abstract concepts used to represent opposite political ideologies. In this sense, they serve as metaphors because they allow people to think abstractly by linking abstract concepts (socialism, conservatism) to concrete sensory experiences. Without such links, concepts would lack reference to the physical world and become difficult to understand and to communicate to other people (e.g., Meier & Robinson, 2004). Through chronic exposure to the association between political orientations and space, people are likely to establish strong semantic associations between socialism and the left, and conservatism and the right. Note also that abstract concepts can be built on concrete sensory experiences, even when people are generally unaware of this sensory grounding (Meier & Robinson, 2004).

But how can an arbitrary seating arrangement give rise to a political metaphor? Recent literature suggests that the way our extensive experience in a physical world structures our understanding or representation of more abstract

concepts constitutes an important scaffolding process. Scaffolding refers to the process through which humans readily integrate incoming information with extant knowledge structures, that is, the process through which new concepts are formed. According to Williams, Huang, and Bargh (2009) some of these concepts emerge early and automatically as a natural part of human development (ontogenetic scaffolding) and evolution (phylogenetic scaffolding). However, some concepts - as it is the case of the left-right coining of politics - offer a more puzzling challenge when one tries to figure out how they have emerged. The answer may be a very simple one - they don't have any particular ontogenetic or phylogenetic origin. They are merely the result of an arbitrary historical accident.

Take as an example one of the best-known anecdotes in computer science that explains why we call programming errors bugs. Grace Hopper, a prominent computer scientist was experiencing problems with a computer, when an investigation showed that there was a moth trapped in the computer (Huggins, 2000). The operators removed the moth and this was the first known example of "debugging" a computer. Grace pasted the actual bug in her notebook, as the "first actual case of bug being found." The concept of "computer bug" developed somehow from this (true) anecdote. What is striking about this example is that it doesn't fit any of the two proposed categories of scaffolding (ontogenetic and phylogenetic). Garcia-Marques and Ferreira (2009) proposed to call this type of scaffolding as cultural scaffolding: when specific episodes, anecdotes or stories of particular individuals or communities serve as scaffolds for higher order abstract concepts. Like the "bug" incident, left and right terminology also resulted from an historical accident and became an instance of cultural scaffolding.

The politically laden concepts of left and right are abstract concepts representing entire ideologies that are distinctly different. The coining of such concepts resulted from an arbitrary seating arrangement involving the horizontal spatial dimension through cultural scaffolding processes. This arbitrary historical incident is still used as a metaphor to establish common ground, to understand and communicate about politics.

The previous line of reasoning was based on the assumption that chronic exposure to the association between political orientations and space is likely to establish strong semantic associations between the socialists and (the spatial) left, and

the conservative and (the spatial) right. However the very few occasions when people are exposed to parliamentary seating are highly unlikely to provide a strong association between a horizontal positioning and the multifaceted concepts of socialism and conservatism, and thus be the origin of the metaphor. Therefore, an important question in this context is whether repeated pairings of abstract concepts and concrete experiences are necessary to establish a metaphoric connection. Alternatively, is it possible that metaphoric links are mediated merely by language. Boroditsky (2000; Boroditsky & Prinz, 2008) advances an alternative view to the one in CMT, arguing that the main function of metaphors is to "provide relational structure to those domains where the structure may not be obvious from world experience (Boroditsky, 2000, p. 3)" distancing herself (e.g., Boroditsky & Prinz, 2008) from Lakoff and Johnson's (1980, 1999) ontogenetic view. According to Boroditsky (2000), metaphoric mappings do not have to emerge as a consequence of repeated *experiential* pairings between concrete and abstract domains as Lakoff and Johnson maintain (1980, 1999), but are present in language and language guides the structural mapping across concrete and abstract domains.

The case of the political categories of left and right may therefore constitute a case that does not fall readily into Lakoff and Johnson's (1980, 1999) repeated *experiential* pairings argument. The generic political categories of left and right are present in a linguistic environment (Semin, 2011) and rarely (if ever) experienced in terms of a direct source–target interface. The labels of *left and right* have become associated with socialism or conservatism but the diverse discourses in which these ideological viewpoints are articulated do not necessarily have any concomitant sensorimotor experiences that are physically anchored to our physical left or our right. Indeed, while some parliamentary seating arrangements reproduce the left-right division, we are rarely if at all exposed visually to such seating arrangements. Similarly, we do not experience left-wing and right-wing politicians to our left and right visual fields respectively or with our left and right auditory channels. The conceptual association between the spatial referents of left and right and the two political positions is an integral part of our '*linguistic ecology*' (Semin, 2011) and not something that we 'experience'. We are repeatedly exposed to expressions of "left" and "right" in the media and other types of discourse that establish strong semantic

and semantically driven spatial associations with distinctive features of the respective ideologies. The association is one that is linguistically given.

This assumption finds support in considerable evidence showing the effect of language on how spatial relations are established (e.g., Ferguson & Hegarty, 1994; Franklin & Tversky, 1990; Perrig & Kintsch, 1985; Taylor & Tversky, 1992). An illustrative example of how spatial information is encoded in language is furnished by Louwerse and Zwaan (2009). These authors have shown that language encodes geographical information by a systematic analysis of regular co-occurrences of towns in our linguistic ecology (e.g., media). An analysis of these co-occurrences, as Louwerse and Zwaan (2009) report, is sufficient to reproduce a geographical map with considerable accuracy. Thus, our linguistic ecology contains spatial information that is the *unintended consequence of multiple speech acts* by which a linguistic reality is constituted (cf. Semin 2011). This gives rise to the question of whether linguistically driven spatial references to left and right that are associated repeatedly with political ideologies in discourse can be transduced to spatial representations of left and right with processing implications despite the fact that their origin does not rely on any sensorimotor experiences.

1.5. SUMMARY AND OVERVIEW

The way we represent knowledge has been puzzling researchers for a very long time. There are two major opposing views on the representation of concepts. One of these suggests that we process amodal symbols in a way that is detached from sensorimotor or affective states. The other view argues that cognition is embodied and situated, thus largely dependent on bodily and contextual constraints.

Our work is conceptually framed by the embodied view of cognition maintaining that both concrete and abstract concepts are grounded in sensorimotor processes. We take this approach to examine the grounding of abstract concepts, namely those related to politics.

As we do not have direct sensorimotor experiences with abstract concepts, the question that arises is whether sensorimotor simulations can nevertheless represent such concepts. A possible take on this issue is whether there are two or more processes that are co-activated to varying degrees in the grounding of concepts, depending on the nature of the concept. Are some concepts grounded modally (e.g., concrete concepts) and others representationally (e.g., abstract concepts)? The research to date does not furnish a unified theoretical perspective on how the processes involved in grounding concrete and abstract concepts are possibly integrated. As it might be evident from the review presented earlier, it can be argued that semantic processes largely drive abstract concepts whereas perceptual processes drive concrete concepts. This invites the possible argument that there are two processes driving the grounding of concepts. In the current work, we obviously do not presume to answer this question. We seek to merely document how an abstract concept can be spatially grounded.

On the other hand, the literature reviewed on the grounding of abstract concepts, in particular the research derived from the CMT, emphasizes the importance of pairing abstract concepts with concrete physical experiences for a metaphor to emerge. We suggest that the grounding of politics in the physical space (and possibly of other concepts) is unlikely to be based on concrete physical experience but to rely on linguistic associations.

While identifying the grounding of an abstract concept may constitute an important contribution, and a necessary first step, there is little to be gained from extending the strategy to the plethora of social concepts and related metaphors available (Landau et al. 2010). Alternatively, research could approach the grounding of abstract concepts with a phenomenon-based focus, and examine the specific situations and contexts in which this grounding is more or less likely to occur. Therefore we seek to address what in our view may constitute some constrains of previous demonstrations on grounding concepts. With rare exceptions each research tends to document this grounding in single tasks tapping isolated cognitive processes. In this work, we explore the associations between political opposites and horizontal spatial locations by using linguistic and nonlinguistic stimulus materials across different cognitive tasks tapping different inferential processes. This may add generalizability to findings suggesting that the political categories of left and right are

represented horizontally in space and extend the growing body of research on spatial representation of abstract concepts.

Notably, very few researchers have examined the role of moderators namely individual differences, which can have an important part in the grounding of abstract concepts (cf. Schubert et al., 2013). Therefore the present research was designed not merely to further demonstrate how politics-related stimuli are spatially grounded but also to identify the role of moderators that may shape these representations, namely political orientation and political awareness of participants.

Moreover, some of the research addressing the spatial grounding of abstract concepts, namely the concepts of time and even politics may have yielded findings that can be explained by stimulus-response compatibility effects. Because most of these studies use classification tasks involving spatial congruency between the spatial label of the stimuli and hand, key or label used to provide the response, they may represent a methodological confound. In some of our studies, we will specifically address these issues.

Finally, most of the research addressing the grounding of abstract concepts has been focused on one single modality, namely visual modality. In line with the assumption of embodied cognition we argue that concepts are multimodally grounded. If that is the case, then the relation between political concepts and space should be observed across semantic, visual and auditory modalities.

In the following chapters, we present our experimental work. Chapter Two includes three studies designed to examine whether the opposite political categories of left and right are spatially anchored on the horizontal dimension. We will do so by using non-linguistic stimuli, namely photos of politicians, across different cognitive tasks. Our general hypotheses are that across the three experiments, photographs of politicians will be perceived, recalled and categorized according to the spatial position implied by their left-right political orientation of the politician displayed in the photo. Additionally, we will explore possible individual moderators of these effects by examining if these associations hold, irrespective of one's own political preference and political awareness.

In Chapter Three we present two studies designed to test an alternative account based on stimulus-response compatibility effects. These studies involve the response to linguistic political stimuli in the absence of convergence between the spatial label of the stimuli (political left / right) and the spatial labels of responses (left / right).

In Chapter Four, we examine the grounding of abstract political concepts across two modalities (visual and auditory) as well as their symbolic representation to determine whether the spatial relationships between specific instances of the political categories overlap across the symbolic, visual and auditory modalities.

Each of the empirical chapters is based on an article that was either published or submitted for publication. These chapters can be read independently and they often present redundant information.

Finally, in the last chapter we present an integrated discussion of the significance of our findings, we address limitations of our work and we outline the main implications of our findings for the theoretical advancement of concept representation.

CHAPTER TWO:

GROUNDING POLITICS IN SPACE: EVIDENCE FROM NONLINGUISTIC TASKS

[5] In three studies, we extend the research on the association between abstract concepts and spatial dimensions by examining the spatial anchoring of political categories with non-linguistic stimuli. The general hypothesis that politicians of a conservative or socialist party are represented spatially is confirmed across the studies. In Study 1, photos of these politicians are spontaneously placed to the left or right of an unanchored horizontal line according to their left-right party membership. In Study 2, the political orientation of members of parliament systematically distorts the recall of the spatial positions in which they were originally presented. Finally, Study 3 reveals that classification responses are faster when the politicians are presented in spatially congruent positions (e.g., socialist politician presented on the left side of the monitor) rather than incongruent ones (e.g., socialist on the right side). Additionally, we examine whether participants' political orientation and awareness moderate these effects and show that the spatial anchoring holds, irrespective of political preference and is more pronounced when political awareness is higher.

Key words: politics; space; metaphor; political orientation, political awareness

The political terms 'left' and 'right' originated in 1789 from a seating arrangement of the legislative bodies in the French National Assembly. The 'ancien régime' sat to the right of the president, the 'revolutionaries' to his left (cf. Gauchet, 1992). This incidental spatial organization of politics has been with us ever since, condensing a variegated political spectrum (Ware, 1996) on the horizontal dimension. The three experiments reported here examined whether an arbitrarily established spatial anchoring shapes how we represent and process nonlinguistic stimuli that are associated with political positions.

Recent research suggests that when a left (right) orientation is induced physically then a somewhat stronger liberal (conservative) attitude is observed

[5] This chapter is based on the paper Garrido, M. V., Farias, A. R., & Semin, G. R. (submitted). Grounding politics in space: Evidence from non-linguistic tasks.

(Oppenheimer & Trail, 2010). Others have shown that participants were faster when classifying left-wing referent acronyms with a left-hand button press and vice versa for right-wing referent acronyms. Faster reaction times were also observed when the political acronym was presented on the side of the screen that was congruent with its political reference (e.g., van Elk et al., 2010).

Recently, Farias, Garrido and Semin (2013) have shown that words classified as socialism-related in terms of semantic meaning (vs. conservatism-related words), were placed more to the left of a horizontal line. Further, when those same words were presented equally loud on both ears they were disambiguated to the ear congruent with the political position expressed by the word. These results indicate not only that a spatial relationship between political categories and the horizontal space exists but also that this association is present across symbolic, visual and auditory modalities.

Alike abstract concepts to do with "affect" or "power" that implicitly activate spatial associations (e.g., Meier & Robinson, 2004; Palma et al., 2011; Schubert, 2005), the generic assumption that linguistic political stimuli are mapped onto horizontal space can in principle be cast within the framework of *Conceptual Metaphor Theory* (CMT, Lakoff & Johnson, 1980; 1999) as the spatial left–right distinction regarding politics can be considered a linguistic metaphor. According to CMT repeated experiences acquired in interaction with our physical environment are contained in image schematic structures, namely sensorimotor schemas.

The generic political left-right categories can be experienced as direct source–target interfaces. This experience is however not derived from direct sensorimotor experiences with political stimuli from which schematic spatial representations would emerge. Although the diverse discourses in which these ideological viewpoints are articulated may have the occasional concomitant sensorimotor experience that is spatially anchored to the left or right, the associations between dichotomic political ideologies and left-right spatial referents are above all present in our linguistic ecology (Semin, 2011).

We are repeatedly exposed to expressions of "left" and "right" in the media and other types of discourse that establish strong semantic and semantically driven spatial associations with distinctive features of the respective ideologies. The labels of *left-wing*, *leftist* or *the Left* have become associated with socialism, communism, social democracy and include references to workers' rights, opposition to unrestrained

capitalism and a general support for social change with a view towards creating a more egalitarian society. In contrast, the categories of *right-wing*, *rightist* and *the Right* refer to views that subscribe to preserving a traditional social order, social stratification, including conservatives, monarchists, aristocrats and theocrats, as well as those who support free market capitalism, and some forms of nationalism. This is predominantly a linguistically given association.

There is considerable evidence showing the effect of language on how spatial relations are established (e.g., Ferguson & Hegarty, 1994; Franklin & Tversky, 1990; Perrig & Kintsch, 1985; Taylor & Tversky, 1992). An illustrative example of how spatial information is encoded in language is furnished by Louwerse and Zwaan (2009), who show that the regular co-occurrences of towns in our linguistic ecology (e.g., media) are sufficient to reproduce a geographical map with considerable accuracy. Thus, our linguistic ecology contains spatial information that is the unintended consequence of multiple speech acts by which a linguistic reality is constituted (cf. Semin 2011).

Opposing political orientations are therefore represented with recourse to linguistic terms. However, the use of linguistic terms or metaphors referring to spatial relations does not necessarily mean that political categories activate modal representations. Although Lakoff and Johnson's (1999) argument relies on the pervasiveness of metaphor in thought as grounded in modality specific source domains, it does not necessarily follow that a representation that is metaphoric activates a representation that is modality specific (e.g., Crawford et al., 2006). Indeed, there are suggestions that metaphoric descriptions may derive from similar conceptual or linguistic structures (Murphy, 1996). Further, some evidence indicates that there is not a direct correspondence between linguistic and nonlinguistic spatial categories (e.g., Crawford, Regier, & Huttenlocher, 2000). The fact that the few studies that have been conducted in this field have relied on linguistic stimuli may in fact conceal the possibility that language is the driving representation and that the spatial grounding of political stimuli is not observed when nonlinguistic spatial categories are at stake.

In the studies reported below, we investigated whether people represent and process nonlinguistic political stimuli (i.e. photos of politicians) with reference to a horizontal spatial dimension across different cognitive tasks to tap different inferential processes. The specific questions we investigated were: Are photos of politicians placed spontaneously in a systematic manner on a horizontal line as a function of

whether they represent socialist or conservative positions; does the party membership of politicians bias the recall of where they were presented on a horizontal line; and does the position on which politicians' photos are presented on a horizontal line influence how fast they are classified as socialist or conservative?

Investigating these questions is not merely to generalize from earlier findings suggesting that the political categories of left and right are represented horizontally in space (van Elk et al., 2010; Farias et al., 2013; Oppenheimer & Trail, 2010). Our main goal was to extend the growing body of research on spatial representation of abstract concepts with nonlinguistic stimuli to further underline the view that the spatial representation of abstract concepts is multimodal rather than merely semantic.

Finally, this research was designed to go beyond the demonstration of how a spatial metaphor influences different psychological processes, a fairly common strategy (cf. Landau et al., 2010, see Schubert et al., 2013 for an exception). Thus, we introduced moderators that could shape our representations, namely political orientation and political awareness of participants.

Participants' *political orientation* can bias the processing of political stimuli (e.g., recall, classification). For instance, one's own position may serve as an anchor or reference point in social perception (Sherif & Hovland, 1961). Earlier findings (e.g., van Elk et al., 2010) indicate that participants who have a preference for the political right yield stronger effect sizes in classifying left-wing parties (yet the same was not found for right-wing parties). Another possible outcome of participants' political orientation in processing political stimuli could be a consistent positive bias for photos of preferred politicians towards the right (cf. Casasanto, 2009, on the association between spatial left-right and negative-positive valence, respectively). In this case, participants who have a preference for the political left could bias the spatial positioning of their preferred politicians photos to the right; bias their recall of the position at which they were seen to the right, and be faster in classifying them when appearing on the right.

The further investigation of one's political preferences may extend our knowledge about the nature of these associations. If the association between political positions and the left-right spatial dimension derives from a shared spatial metaphor, then these associations should hold, irrespective of one's own political preference. In contrast, if these spatial associations are affected by the perceived distance of a party to one's own political preference, or by valence-related spatial bias shaped by political

preferences, then we should expect the strength of the spatial associations to be dependent on one's own sociopolitical position.

Additionally, we expected that *political awareness* would amplify the metaphoric connection between space and concepts associated with left and right-wing orientations. Participants who are politically aware are likely to be more frequently exposed to the left-right categorization. Consequently these categories should be more salient and accessible to them (cf. Higgins, 1996) and therefore amplify their judgments (e.g., Higgins & Brendl, 1995) regarding the left-right differentiations between location, recall and classification of politicians.

Across the three experiments reported below, we used the same stimulus materials and moderator variables. [6] The stimulus materials consisted of 12 photos of left and right-wing politicians taken from a parliamentary website. A pilot study (N = 54) revealed that the politicians were considered to be highly familiar (7-point scale, ranging from 1 = not familiar at all to 7 = very familiar), as indicated by their ratings which differed significantly from the scale midpoint (M = 6.07, SD = 0.70), $t(49)$ = 20.98, $p < .001$.

The same pilot study showed on a political orientation 7-point scale (ranging from 1 = left-wing to 7 = right-wing) that left-wing politicians were rated significantly below (M = 2.31, SD = 1.23), $t(45)$ = -9.31, $p < .001$; and right-wing politicians significantly above the scale midpoint (M = 5.39, SD = 1.30), $t(48)$ = 7.46, $p < .001$.

The first of the three experiments consisted of a free spatial ordering task. Participants were asked to position photos of prominent politicians with left or right-wing parliamentary views on a horizontal line. We predicted that party membership of the politicians would affect these placements with socialist politicians placed more to the left and conservative politicians to the right.

In the second experiment, the same photos were presented on the left and the right-side of a monitor. The participants then had to recall how often each politician was presented on which side. We predicted that a memory bias would be observed if the spatial metaphor were influential. Socialist politicians would be recalled as having been presented more frequently on the left side of the monitor and the reverse for conservative politicians.

[6] The stimulus materials and procedures of the current study can be found in Appendix A.

Finally, in a speed accuracy classification task, participants' had to decide whether a politician who appeared to the right (or left) side of the monitor was a socialist or conservative politician. Socialist politicians appearing on the left and conservative politicians appearing on the right were expected to be classified faster than vice versa.

Our objective was also to examine moderators that may influence this relationship. Therefore, we included variables tapping participants' *political awareness* and *political orientation* in all three experiments. Political awareness was assessed by 18 items from the European Values Survey (2000), measuring interest in politics, political engagement, and political knowledge, and participants' political orientation was assessed by a 7-point scale (1 = left-wing to 7 = right-wing).

Overall, if politically driven spatial associations primarily reflect the activation of spatial metaphors, we would expect the association between political categories and space to hold, irrespective of one's own political preference. We assumed that one's exposure to politics strengthens this spatial metaphor, and predicted that politically aware participants will perform in a more metaphor congruent way across the three different tasks compared those who are less politically aware.

2.1. EXPERIMENT 1

We started by testing the hypothesis that conservative politicians would be placed more to the right and socialist politicians to the left. Participants were asked to engage in a free ordering task of politicians' photos on the horizontal dimension.

2.1.1. Method (Participants and Procedure)

[7]Ninety participants (64 females; M_{age} = 22.94) received two randomized sets of pretested photos of eight politicians each (three socialist, three conservative, and two fillers in each set), and were asked to place them on a horizontal line (with eight possible fixed spatial positions) as they thought, "most people would". The task was

[7] The stimulus materials and procedures of the current study can be found in Appendix A.

repeated with a second set of different photos. Additionally, participants responded to the measures of political awareness and political orientation.

All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

2.1.2. Results and Discussion

An ANOVA with average spatial placement of the politicians as the dependent variable and politicians' party membership (socialist vs. conservative) as the within participants variable yielded the predicted outcome. Politicians were placed along the lines of their party membership, $F(1, 89) = 5.20$, $p < .025$, $MSE = 2.70$, $\eta_p^2 = .055$; with conservative politicians placed significantly to the right ($M = 4.68$, $SD = 1.15$) of socialist politicians ($M = 4.12$, $SD = 1.25$).

Introducing participants' political orientation and political awareness (α = .80) to the analysis (both z-transformed) as covariates revealed a significant interaction between the average spatial placement of the politicians' photos and participants' awareness, $F(1, 85) = 7.42$, $p < .008$, $MSE = 2.57$, $\eta_p^2 = .080$[8]. A simple slopes analysis indicated that the more politically aware separated socialist and conservative politicians more distinctly, $t(88) = -3.50$, $p < .001$, than less political aware ones, $t(88) = .379$, $p < .705$. No effects were found for political orientation, $F < 1$.

The results of the first experiment were unambiguous. Participants placed politicians' photographs systematically to the left or the right on an unanchored horizontal line as a function of politicians' party membership. Moreover, this systematic placement effect was more pronounced for more politically informed participants.

[8] One participant was not entered to the regression analysis because the relevant items for the political awareness measure were not filled out.

2.2. EXPERIMENT 2

The second experiment was designed to examine whether a politician's membership distorts recalling the perceived position of where a politician was presented spatially. Politicians' photos were presented to participants equally frequently to the left and right-sides of the monitor. The task was to recall on which side each politician had been presented more frequently. We predicted that socialist politicians would be remembered as having been presented more often to the left of the monitor and vice versa in the case of conservative politicians.

2.2.1. Method (Participants and Procedure)

Fifty-two university students (46 females; M_{age} = 20.04) participated in this study. All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

Participants were informed that the study was about visual memory for faces and that a number of photos of persons would appear on the screen. Participants were then presented with 12 critical stimuli (socialist and conservative politicians' photos) and 20 additional filler stimuli (other unknown politicians' photos). Each critical photo was presented four times (twice on the left and twice on the right-side of the monitor) for 3000ms. The filler photos were randomly presented (one, two, three or four times) on the left or the right-side of the monitor. There were a total of 144 trials (48 critical and 96 filler photos). Subsequently, participants were shown the critical photos and asked to indicate the most frequent location (left or right) each photo had been presented. Finally, participants completed the political awareness and political orientation measures.

2.2.2. Results and Discussion

We conducted an ANOVA with politicians' party membership (socialist or conservative) as the within participants variable and the average number of times a

critical stimulus was recalled as having been presented to the left as the dependent variable. Notably, right and left-position recall scores are tied on this dependent variable thus left-position recall-average mirrors the right-position recall. Specifically, we had six photos of conservative and six photos of socialist party members. If a participant recalled the six left-wing politicians as being presented to the left then that would be a score of six. If however all six left-wing politicians were recalled to have been positioned to the right then the score would be a zero. The symmetrical scoring would apply to how the positioning of the right-wing politicians was recalled. For the photos of politicians of each party a score of three would indicate no systematic discrimination.

As expected, recall was influenced by the politicians party membership, $F(1, 51) = 7.99$, $p < .007$, $MSE = 3.12$, $\eta_p^2 = .135$. Participants recalled socialist politicians to have appeared significantly more often on the left ($M = 3.44$, $SD = 1.33$) than conservative politicians ($M = 2.75$, $SD = 1.08$), $t(51) = 2.83$, $p < .007$. The recall means were both above chance level ($t(51) = 1.55$, $p < .01$ and $t(51) = 1.29$, $p < .05$). These results were not influenced by participants' political awareness ($\alpha = .84$) or political orientation (both F's < 1; *ns*).

As predicted, the recall of the position at which the politicians were more frequently presented was biased as a function of the politicians' party membership. Socialist politicians were recalled as having been presented more frequently on the left and conservative politicians as being more frequently presented on the right-side of the monitor. These results were not influenced by political orientation and awareness. The possible reasons for this are presented in the general discussion.

2.3. EXPERIMENT 3

Experiment 3 consisted in a speeded categorization task where participants had to classify a set of politicians' photos as either socialist or conservative. This task was used to inform us about the potentially automatic nature of the spatial anchoring process and to undermine the possibility of participants transducing the visual stimuli to linguistic representations. We predicted faster classification times when socialist

politicians were presented to the left and conservative were presented to the right of the monitor.

2.3.1. Method (Participants and Procedure)

[9]Fifty university students (44 females; M_{age} = 20.04) participated in this study. All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

Participants were asked to classify the photos of well-known politicians as rapidly and accurately as possible as socialist or conservative, by using the "U" and the "N" keys (counterbalanced across participants), avoiding any congruence between response key position and party membership by being orthogonal to the horizontal spatial dimension. Participants were then presented with photos of eight politicians (four socialist and four conservative) and four fillers (other unknown politicians' photos). Each photo was presented six times, three times to the right and thrice to the left-side of the monitor giving rise to a total of 72 trials. Additionally, participants' political awareness and political orientation were assessed.

2.3.2. Results and Discussion

Trials with errors and response times that were 2.5 SD above or below the trial mean were omitted from the analysis[10]. A 2 (party membership: socialist vs. conservative) X 2 (presentation position: left vs. right) within participants analysis of variance revealed the predicted interaction, indicating that the speed of classification is faster when party membership and presentation position coincide $F(1, 48) = 11.75$, $p < .001$, $MSE = 18681$, $\eta_p^2 = .197$. Participants were significantly faster in categorizing socialist politicians when they appeared on the left ($M = 919$, $SD = 212$) than when they appeared on the right-side of the monitor ($M = 981$, $SD = 252$), $t(48) = -1.96$, $p < .056$. Conservative politicians were categorized faster when presented to the

[9] The stimulus materials and procedures of the current study can be found in Appendix A.
[10] One participant was excluded because the RT data for right-wing politicians was missing.

right (M = 954, SD = 205) than to the left-side (M = 1026, SD = 266) of the monitor, $t(48) = 2.99$, $p < .004$.

An interaction between party membership, presentation position of the photos and participants' political awareness emerged when participants' *political orientation* and *political awareness* (α = .84) (z-transformed) were introduced in a co-variance analysis, $F(1, 45) = 7.25$, $p < .010$, MSE = 15440, $\eta_p^2 = .139$. A simple slopes analysis indicates as predicted, that participants with higher levels of political awareness had more extreme RT's when categorizing socialists presented to the left and conservatives to the right $t(48) = -4.66$, $p < .001$, than the less political aware participants $t(48) = -.755$, $p = .454$. Notably, participants' political orientation did not moderate the results ($F < 1$) (see general discussion).

2.4. General Discussion

In three experiments, we have shown that a horizontal spatial dimension structures the representation of nonlinguistic stimuli associated with the political left and right.

In a free ordering task, participants placed photographs of conservative politicians more to the right than socialist politicians. When photographs of politicians were presented equally frequently on the right or left-side of the monitor participants remembered conservative politicians as having been presented more often on the right-side and socialist politicians as having been presented more often on the left-side. Finally, participants were faster in categorizing politicians as conservative when they were presented on the right-side of the monitor (and vice versa).

The consistent pattern of these findings underlines the general argument that representational associations between politicians' party membership and spatial referents have processing implications across different tasks inviting different inferential processes. Moreover, these results lend additional support to previous findings (van Elk, et al, 2010; Farias et al, 2013; Oppenheimer & Trail, 2010) suggesting that the polar opposites "left" and "right" are spatially represented.

Importantly the present studies show that the association between politics-related stimuli and the horizontal space is independent of the linguistic nature of the politically laden stimulus materials used. However, as Crawford and colleagues (2006) argue these kind of experimental tasks alike many of those involved in our daily lives may never be purely non-linguistic, where people are given verbal instructions and they may covertly code stimuli or responses in linguistic terms. Nevertheless, the present studies particularly Experiment 3, seem to suggest that the associations between opposite political views and horizontal space, which is commonly expressed in language, can be observed in the absence of linguistic materials or responses.

Moreover, the reported results do not rely on possible congruence effects like left keys being pressed faster for stimuli that are visually and conceptually located to the left which is the case in earlier research (van Elk et al., 2010, experiments 1-3). While Experiment 2 can be affected by a structural overlap between stimulus–response (e.g., Proctor & Cho, 2006), the same argument cannot be advanced against Experiments 1 and 3. Experiment 1 was a free positioning task with no reference to left-right spatial response labels and in Experiment 3, the response keys were aligned vertically.

In contrast to previous studies (van Elk et al., 2010), we did not find moderation effects due to participants' political orientation suggesting that being left or right-wing does not affect the processing of the political stimuli as a function of their spatial position.

As such these spatial associations do not seem to reflect the perceived distance of a party to one's own political preference, or permeable to valenced driven spatial biasing mechanisms. On the contrary, these findings suggest that the association between the opposed political orientations of "left" and "right" and left-right spatial referents primarily reflect the activation of spatial metaphors, which seem to hold irrespective of one's own political preferences or other valence driven associations to horizontal spatial positions.

Moreover, participants who were politically more aware either placed the politicians in a more polarized way on the horizontal dimension (Experiment 1) or were faster in classifying the politicians in the respective conservative vs. socialist

categories (Experiment 3). These results are not surprising, but they are highly informative.

They are not surprising since participants who are more aware of politics are more knowledgeable and more confident about their judgments. Substantial research literature indicates that the more confident one is the more extreme is one's judgment (e.g., Tesser & Leone, 1977). Moreover, as argued in the introduction, these categories should be more accessible (cf. Higgins, 1996) to participants who are more aware of politics, who are more likely to amplify their judgments (cf. Higgins & Brendl, 1995).

We find no such moderator effects in Experiment 2, when participants were asked to recall if a photo of a socialist or conservative politician was presented more frequently on the left or right-side of the monitor. As noted above, political awareness is related to polarization as observed in the placement of the photos on a horizontal dimension (Experiment 1) and in the reaction times during classification (Experiment 3). However, in the recall task the response options are limited – they are binary: left or right. This constraint prohibits the possibility of any polarization as a function of political awareness, as the results also suggest. Importantly, the fact that spatial grounding of political stimuli mostly observed for politically aware participants emphasizes the arbitrary nature of the political metaphor – if the association is learned then congruent biases are observed between spatial anchors and socialist and conservative political positions. However, when people are politically unaware then this is not observed.

The contribution of the current research lies in its invitation to consider additional variables in a broader framework about the source-target or concrete – abstract relationship, or the way we conceptualize metaphor driven comprehension and representation of abstract concepts. We used an arbitrary spatial anchoring established in the eigtheen century and show how it still shapes our representation and inferences of political stimuli. Like other abstract concepts, political categories are mostly the result of linguistic associations that are often derived and reinforced by interaction between body morphology and the physical environment which are powerful enough to structure the nature of the types of inferences made, namely the way our perception, memory and classification processes are driven.

The present findings support and extend the growing body of research on spatial representation of abstract concepts, namely political categories, by showing the spatial grounding of politics in different nonlinguistic cognitive tasks.

The role of space in grounding abstract concepts has been examined predominantly with linguistic stimuli. Our studies provide additional evidence that some abstract concepts are represented spatially and not only linguistically, leaving open the possibility that the spatial relationship between political categories and the horizontal space is activated by symbolic, but also modal representations. However it is possible that despite dealing with nonlinguistic stimuli, participants may have transduced them to semantic representations. In fact, it can be argued that even tasks that require fast processing (e.g., Experiment 3) may leave the operation of different cognitive processes open, namely allowing the activation of the motor system to be mediated by the retrieval of 'abstract' conceptual content (cf. Mahon & Caramazza, 2008). In this sense, our studies albeit indicative, do not provide a definitive answer to whether the grounding of abstract concepts involves purely modal processes (cf. Dove, 2009, 2011; Machery, 2007; see also Barsalou et al., 2008; Simmons et al., 2008).

The investigation of moderators may also extend our knowledge of the nature of these associations. As our results reveal that the association between spatial dimensions and political position holds irrespective political preferences. This suggests that the activation of spatial metaphors is independent of one's both sociopolitical position and valence-related spatial biases. This may reflect an important functional property of metaphorical thought which allows efficient communication. For example, despite of one's political preferences one can think and talk about political concepts using similar conceptual metaphors.

The arbitrary nature of the spatial political metaphor is further documented by the moderation of political awareness. Our findings show that if you do not have the metaphor, then you do not process information in the same way. Although this may be obvious, it nevertheless underlines the acquired and arbitrary nature of specific source and target relationships.

In conclusion, this research opens interesting issues with important implications for our understanding of how abstract concepts are represented. The examination of the relations between conceptual and spatial referents by using nonlinguistic materials that can hardly be transduced to semantic representations may constitute a possible direction. Another avenue can be the identification of other

moderators, namely individual and cultural differences that shape the way these associations are established and allow to distinguish culturally specific and created categories from target categories that are universal but nevertheless relate source and target in culturally specific ways (like time, cf. Boroditsky & Gaby, 2010; Semin & Manstead, 1983).

CHAPTER THREE:

GROUNDING ABSTRACT CATEGORIES IN SPACE OR MERE COMPATIBILITY EFFECTS? THE CASE OF POLITICS

[11]In two studies, we extend the work on the spatial grounding of abstract concepts by examining the role of stimulus response compatibility, that is, the dimensional overlap between the stimulus and the response in driving the results obtained in this domain. In study 1, participants were asked to classify politics-related words appearing on the left or the right side of a computer screen as socialist or conservative. Responses were given by pressing vertically aligned keys and thus orthogonal to the spatial information that may have been implied by the words. Left or right index finger use to provide the response was also counterbalanced. In study 2, a lexical decision task, participants categorized political words presented to the left or the right auditory channels, by pressing the top/bottom button of a response box. The content of the response (word or nonword) was also orthogonal to the spatial information that may have been implied by the words. In both studies, results show faster responses when socialism-related words are presented on the left and conservatism-related words are presented on the right. Overall our findings suggest that the spatial grounding of abstract concepts (or at least politics-related ones) is independent of experimentally driven stimulus-response compatibility effects.

Key words: spatial grounding, abstract concepts, compatibility effects, politics

Previous studies have already documented that abstract concepts like "affect", "power" or "time" implicitly activate spatial associations (e.g., Boroditsky, 2000; Crawford, et al, 2006; Meier & Robinson, 2004; Schubert, 2005). More recently, others have shown that the political categories of left and right are represented horizontally in space (e.g., van Elk et al., 2010; Farias et al., 2013; Oppenheimer & Trail, 2010).

[11] This chapter is based on the paper Garrido, M. V., Farias, A. R., & Semin, G. R. (submitted). Grounding abstract categories in space…or mere compatibility effects? The case of politics.

According to the theory of conceptual metaphor (Lakoff & Johnson, 1999), non-linguistic mappings from a concrete source domain (e.g., space) may be applied to a relatively abstract target domain (e.g., politics), to support comprehension and communication. The use of the spatially polar opposites of left–right when thinking and talking about a politically-related abstract concept may thus constitute an instance of a linguistic metaphor.

In the domain of politics, van Elk et al. (2010) have shown that participants indicating whether a stimulus appearing in the middle of the screen is a political acronym were faster when the key they are instructed to press was congruent with the political referent of the acronym. Overall right-key press was faster when the political acronym represents a right-wing party and the reverse for left-key press. Moreover, faster responses were also observed when participants responded with a single key-press to stimuli appearing on the left or the right of the screen as a function of their political meaning. Acronyms representing right-wing parties presented on the right were classified faster.

The question of whether the associations between political referents and space are due to the representation of politics as two spatial polar opposites has been addressed as a facilitation effect (e.g., van Elk et al., 2010) derived from stimulus/ response compatibility.

Stimulus-response compatibility (SRC) effects have been documented for stimulus and response sets that have dimensional overlap. Although originally defined as perceptual (physical) or conceptual similarity, irrespective of the spatial or non-spatial nature of the dimensions (Kornblum, 1991; Kornblum, Hasbroucq, & Osman, 1990) dimensional overlap can also include structural similarity (e.g., ordinal structure of the stimulus and response sets; Kornblum & Lee, 1995; see for a review, Proctor & Cho, 2006). A classic example of these facilitation effects is the one reported for number processing, which has been found to be accompanied by the activation of spatial left/ right associations (spatial–numerical association of response codes – SNARC-effect; Dehaene, Bossini, & Giraux, 1993). Faster reaction times were observed for left (and down) button presses in the presence of low numbers and for right (and up) button presses for high numbers (see also Schwarz & Keus, 2004).

Recent studies in the domain of the representation of time related concepts, for example, have provided initial support for the assumption that time-related stimuli focus people's attention to the right and the left, while partially avoiding dimensional overlap (e.g., Lakens et al., 2011a). Moreover, Farias et al., (2013) have recently shown that words classified as socialism-related in terms of semantic meaning, were placed more to the left (vs. conservatism-related words) of a horizontal line and were auditorilly disambiguated to the ear congruent with the political position expressed by the word. Importantly while the visual task may have implied some stimulus-response dimensional overlap, the auditory task referred to loudness judgments, which are unrelated to political labels (yet the response label - left/right – may still represent an overlap).

Notably, in the case of politics SRC can also be said to occur. The spatial label represented in the political stimuli (e.g., communism), can overlap with the left / right spatial nature of the response that is required (e.g., press right or left key, using left / right hand). Moreover, even when the response does not entail an obvious spatial referent (e.g., left / right button press), the spatial dichotomy is often present in the response label (e.g., indicate if it is a conservatism or socialism related stimuli or the activation of the political spatial reference, left-wing and right-wing).

In the current paper, we examine whether the findings indicating that politics is represented in the horizontal space are independent of potential SRC type compatibility effects.

In the first study, participants were asked to categorize conservatism or communism related words by pressing response keys that were vertically aligned. Thereby we controlled for SRC, which could be introduced by horizontal (but not vertical) response key assignments. Further, we controlled for the dimensional overlap in stimulus-hand mappings and examined their influence in the results, by having participants responding to socialism (and conservatism) related stimuli either with a right or a left hand key press. In the second study, a lexical decision task, the stimuli were auditorily presented and participants responded by using vertically aligned keys. Importantly, as the response only required an indication of whether the stimuli presented was a word or a non-word, the potential overlap between the spatial information that may have been implied by the words and the (absent) spatial labels of the response were also avoided.

3.1. EXPERIMENT 1

Experiment 1 involved a speed accuracy classification task whereby participants classified a set of words as referring to socialism or conservatism political ideologies. Neutral politics-related words were also included. The words were randomly presented on the left or the right side of the monitor. Responses were given by pressing vertically aligned keys (the response keys were counterbalanced between participants). Thus, we were able to control for stimulus-response compatibility effects, which could have emerged from the overlap between the spatial referents activated by political stimuli and the spatial nature of the response. Further, we controlled for the structural overlap in stimulus-hand mappings by counterbalancing between participants the hand used to press the key for categorizing the words as socialist or conservative.

We predicted that socialism-related words appearing on the left and conservatism-related words appearing on the right would be classified faster than vice versa regardless of the key or the hand used to provide the response. The classification of neutral words should be equally fast irrespective of the side they were presented.

3.1.1. Method (Participants and Procedure)

[12] Sixty-nine ISCTE-IUL university students (M_{age} = 20.88; 54 females, 94% right handed) participated in this study. All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

We used 10 socialism-related words and 10 conservatism-related words as well as three neutral words, all of which had been previously piloted (Garrido, Farias, & Palma, 2010). The socialism-related stimuli comprised six socialism referent words (*Communism, Demonstration, Proletariat, Revolution, Strike, Union*) two socialist

[12] The stimulus materials and procedures of the current study can be found in Appendix B.

political party acronyms *(PCP – Portuguese Communist Party; BE – Left Block)* and two socialist politicians names *(Jerónimo Sousa,* leader of PCP and *Francisco Louçã, leader* of BE*)*. The conservatism related-stimuli included six conservatism referent words (*Stockmarket, Capitalism, Colonialism, Consumerism, Profit, Wealth),* two conservative political party acronyms *(CDS- Popular Party; PSD - Social Democratic Party)* and two conservative politicians' names *(Paulo Portas, leader of CDS – Popular Party and Passos Coelho, leader of PSD – Social Democratic Party).* The neutral words (elections poll, government and parliament) were not associated with any particular political orientation (socialism or conservatism).

Participants were seated in front of a computer monitor and informed they would be participating in a categorization study. They were further told that their task would be to indicate if each stimulus presented was associated with socialism or conservatism political ideologies by pressing the "T" and "V" keys on the keyboard (counterbalanced between participants). The hand pressing the key was also manipulated between participants. Therefore there were 4 between participants' conditions (2 key: "T" vs. "V" X 2 hand: left vs. right). For example, to classify a word as referring to socialism participants should press "T" with their left index finger (condition 1), with their right index finger (condition 2), or to press "V" with their left (condition 3) or right (condition 4) index finger.

The words were randomly presented on the left and right side of the monitor. Each word appeared three times in each location (left or right). In total there were 138 trials.

3.1.2. Results and Discussion

Inaccurate trials (20%)[13] as well as trials with response latencies 2.5 SD above or below the latency mean (11%) were excluded from the subsequent analysis.

A 3 (Word Type: conservatism, socialism, neutral) X 2 (Side of Presentation: right, left) within participants X 4 (Condition: 1, 2, 3, 4) between participants analysis of variance revealed a main effect of Word Type F (2,112) = 16.07 $p < .001$, *MSE* =

[13] Nine participants with hit rates below 50% were excluded from the analysis based on the assumption that they were responding below chance.

8583, η_p^2= .223, indicating that participants were faster in classifying conservatism (*M* = 954, *SD* = 115) and socialism-related words (*M* = 948, *SD* = 119), than neutral words (*M* = 1011, *SD* = 165), *t*(56) = 4.02, *p* < .001, two-tailed; and *t*(56) = 4.42, *p* < .001, two-tailed; respectively. These slower reaction times observed for neutral words may be due to the fact that classifying a neutral word as representing conservatism or socialism may constitute a more difficult task.

As expected there was a significant interaction between the words' associated political orientation and the side of the monitor in which they appeared (*F* (2,112) = 13.20, *MSE* = 8583, *p* < .001, η_p^2 = .191). Planned comparisons testing our specific hypothesis indicate that participants were faster in classifying conservative-related words appearing on the right (*M* = 920, *SD* = 112) than the same words appearing on the left (*M* = 989, *SD* = 118), *t*(56) = 4.57, *p* < .001, two-tailed. Participants were also faster in classifying socialism-related words appearing on the left (*M* = 922, *SD* = 108) than the same words appearing on the right (*M* = 973, *SD* = 130), *t*(56) = 4.05, *p* < .001. As expected the classification of neutral words was equally fast on both the right (*M* = 992, *SD* = 152) and the left side (*M* = 1030, *SD* = 177), *t*(56) = 1.59, *p* < .117, two-tailed. No further main or interaction effects were significant.

Overall these results replicate the spatial grounding of politics (e.g., van Elk et al., 2010; Farias et al., 2013; Oppenheimer & Trail, 2010). Importantly, they suggest that the observed effects, are not only independent of the compatibility between the spatial information that may have been implied by the words and spatial alignment of the response-key but they also emerge in the absence of compatibility between stimulus spatial content and hand used to provide the response. Therefore, the results provide preliminary support to the assumption that political-related stimuli focus people's attention to the right and the left irrespective of stimulus-response-key and response-hand compatibility effects.

However, before we proceed with a more general discussion of the significance of these results we further examined whether the spatial grounding of political concepts may derive from the overlap between the spatial nature of the stimuli (political left and right) and the nature of the response content (left / right). This was examined in a second study using a lexical decision task.

Participants had to categorize a set of stimulus as words and non-words that

were auditorily presented to the left, right or both channels. The response was given by pressing the top or the bottom key of the E-prime response box and was thus orthogonal to the spatial information that may have been implied by the words. Further, the nature of response content (word or non-word) did not have a spatial nature avoiding stimulus-response overlap. We predicted faster reaction times to socialism-related words presented in the left auditory channel and conservatism-related words to the right channel. Response times to politically neutral should be equally fast irrespective of the auditory channel to which they were presented.

3.2. EXPERIMENT 2

Experiment 2 was designed to examine if the pattern of results obtained in the first experiment, where the response involved left and right spatial labels holds in a paradigm that does not involve any type of overlap between the spatial referent of the stimuli and the nature of the response (word or non-word). In this experiment we used a lexical decision task and asked participants to categorize a set of stimuli that were auditorily presented to the left, right or both channels as words or non-words. The response was given by pressing the top or the bottom key of the E-prime response box being thus orthogonal to the spatial information that may have been implied by the words. We predicted faster reaction times to socialism-related words presented to the left auditory channel and conservatism-related words presented to the right auditory channel.

3.2.1. Method (Participants and Procedure)

[14] Forty six Utrecht University students (M_{age} = 20.93; 31 females) participated in this study for partial course credit.

[14] The stimulus materials and procedures of the current study can be found in Appendix B.

All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

We used six socialism referent words (*Communism, Demonstration, Proletariat, Revolution, Strike, Union*), six conservatism referent words (*Capitalism, Colonialism, Consumerism, Profit, Stockmarket, Wealth*), and six neutral words (*Dice, Glass, Paper, Pot, Record, Ring*) as well as eighteen non-words to divert participant's attention to the political reference of the stimuli.

The words were converted to audio files using a text to speech application. Each word was randomly presented three times to the left and three times right auditory channel as well as three times to both auditory channels simultaneously. Again simultaneous presentation to both auditory channels was used to divert participants' attention from any right/left labels. There were 324 trials in total.

Participants were seated in the cubicles wearing headphones. Their task was to classify if the word that was presented over headphones was a word or a non-word by pressing the top or bottom key of the E-prime response box. The key position was counterbalanced between participants**.**

3.2.2. Results and Discussion

Inaccurate trials (8,21%) as well as trials with response latencies 2.5 SD above or below the latency mean (21,8%)[15] were excluded from the subsequent analysis.

A repeated measures analysis of variance on the response latencies with type of word (socialist, neutral or conservative) and auditory channel (left, right, both) as independent variables revealed two main effects and the expected interaction.

The first main effect of word type ($F(2,82) = 97.2$, $p < .001$, $MSE = 2907$, $\eta_p^2 = .703$), indicated that participants were faster in categorizing neutral words ($M = 779$, $SD = 80$) than conservative ($M = 864$, $SD = 90$), $t(41) = 10.70$, $p < .001$, two-tailed) and socialism related words ($M = 857$, $SD = 81$, $t(41) = 11.28$, $p < .001$, two-tailed). This is not a surprising result as neutral words were probably more familiar to

[15] Note that from the total of trials excluded over 20% corresponded to non-words, overal with very long response latencies. Four participants with error rates above 50% were excluded form the analysis.

participants than the two politics related word categories.

The second main effect was for the auditory channel, ($F(2,82) = 25{,}59$, $p < .001$, $MSE = 1457$, $\eta_p^2 = .384$) and indicated that participants were faster in classifying the words presented simultaneously to both ears ($M = 814$, $SD = 85$) than those presented to right ($M = 839$, $SD = 84$, $t(41) = 4.76$, $p < .001$, two-tailed) or to the left auditory channel ($M = 848$, $SD = 82$, $t(41) = 6.48$, $p < .001$, two-tailed). Classification times were also significantly faster when the words were presented to the right than to the left auditory channel ($t(41) = 2.19$, $p < .034$, two-tailed). The overall pattern was therefore skewed to the right reflecting a general bias due to hemispheric asymmetry with verbal information presented to the right ear being processed more efficiently (e.g., Belin et al., 1998; Kimura, 1961).

The interaction between word type and presentation channel was also significant $F(4,164) = 2.42$, $p < .051$, $MSE = 1466$, $\eta_p^2 = .056$. This interaction shows that conservatism words are classified faster when they are presented on both auditory channels ($M = 837$, $SD = 95$) than when they are presented to the right ($M = 866$, $SD = 93$; $t(41)=2.79$, $p < .008$, two tailed) or the left auditory channel ($M = 890$, $SD = 83$; $t(41) = 5.68$, $p < .001$, two tailed). Importantly, for our predictions participants are faster classifying conservative words when they are presented to right than when they are presented to the left $t(41) = 3.198$, $p < .003$, two tailed). Socialism related words we classified faster when presented to both auditory channels ($M = 843$, $SD = 80$) than when they were presented to the right ($M = 865$, $SD = 83$; $t(41) = 3.07$, $p < .004$, two-tailed) or to the left auditory channel ($M = 863$, $SD = 80$; $t(41) = 2.86$, $p < .007$, two-tailed). Classification times did not differ between left and right auditory channels ($t(41) = .22$, $p < .825$. Finally, neutral words were classified faster when presented to both auditory channels ($M = 763$, $SD = 80$) than when presented to the right ($M = 785$, $SD = 75$; $t(41) = 2.62$, $p < .012$ two-tailed) and the left auditory channel ($M = 789$, $SD = 84$; $t(41) = 2.88$, $p < .006$). No significant differences were observed in the classification latencies of neutral words on the left and right auditory channels ($t(41) = .59$, $p < .562$, two-tailed).

Because neutral words and dual channel presentation simply constituted distracting conditions we tested if the observed interaction would hold when only socialism and conservatism words and left-right channel were considered. A repeated measures analysis of variance on the response latencies with type of word (socialist,

conservative) and auditory channel (left, right) as independent variables was then performed to test our specific hypotheses.

The results revealed a main effect of auditory channel $F(1,41) = 4.36$, $p < .043$, $MSE = 1238$, $\eta_p^2 = .096$ indicating that participants were faster in categorizing the words when they were presented to the right ($M = 865$; $SD = 88$) then to the left auditory channel ($M = 877$; $SD = 82$). Additionally, participants' were faster classifying socialist ($M = 864$; $SD = 82$) than conservative words ($M = 878$; $SD = 88$), $F(1,41) = 5.71$, $MSE = 1441$, $p < .022$, $\eta_p^2 = .122$.

Importantly, the interaction between type of word and presentation channel was also significant, $F(1,41) = 5.80$, $p < .021$, $MSE = 1233$, $\eta_p^2 = .124$, confirming that the classification of conservatism-related words was faster when these words were presented to the right channel ($M = 866$, $SD = 93$) than to the left one ($M = 890$, $SD = 83$). Additionally, despite the main effect indicating that right channel classifications were faster than left channel, socialism words were not classified faster when presented on the right. In fact, response latencies did not differ significantly on both channels and means were even reversed: socialism-related words presented on the left channel ($M = 863$, $SD = 80$); on the right channel ($M = 865$, $SD = 83$).

These findings suggest that the classification of words referring to different political positions is driven automatically and systematically as a function of their spatial presentation congruence. Conservative words were recognized as words more rapidly when presented in the right auditory channel. Despite the right channel bias the same did not occur for words referring to socialism. Further, the observed effects emerged in a lexical decision task, which avoids structural overlap in stimulus–response mappings from influencing the results (e.g., Proctor & Cho, 2006).

3.3. General Discussion

The use of the spatial polar opposites of left–right when thinking and talking about politically related abstract concepts may constitute an instance of a linguistic metaphor (Lakoff & Johnson, 1999), whereby non-linguistic mappings from the

concrete source domain (e.g., space) are applied to the relatively abstract target domain (e.g., politics).

Previous studies have already documented that the political categories of left and right are represented horizontally in space (van Elk et al., 2010; Farias et al., 2013; Oppenheimer & Trail, 2010). In a series of studies, van Elk and colleagues (2010) have come to the conclusion that the processing of political information is accompanied by the implicit activation of spatial left-right associations. The associations between political and spatial stimuli has however been addressed as a facilitation effect (e.g., Dehaene et al., 1993). Faster reaction times were observed when participants respond with the key/hand that is congruent to the perceived orientation of the political stimuli (e.g., making faster right-hand button presses in response to political stimuli representing a right-wing party, van Elk et al., 2010). In contrast, if the side of response key/hand does not match the spatial referent of the perceived stimuli, slower reaction times were observed (van Elk et al., 2010).

Our results suggest however that the observed association between political abstract concepts and space does not derive merely from the fact that political information primes particular spatial response codes. In fact, our results show that the association between political concepts and space is observed in the absence of a structural overlap in stimulus-response mappings.

In study one, we showed that participants were faster classifying political stimuli as conservative when they were presented on the right side, and vice versa for socialism-related stimuli in the absence of a left-right button press or regardless the hand used to respond. In study 2, we have shown that political conservatism-related stimuli presented to the right auditory channel were classified faster as words than when presented to the left auditory channel and despite right channel advantage due to processing asymmetry socialism related words were classified faster when presented on the left (although not significantly). These results further support the idea that political-related stimuli are grounded in space independently of stimulus-response compatibility.

Our results are in line previous evidence of the spatial grounding of politics that is now further demonstrated with different types of political stimuli (words, party acronyms, politicians' names), in two different countries and across visual and

auditory modalities. Furthermore, the similar pattern of results obtained in studies 1 and 2 across two different sensory modalities (vision and audition), replicates the previously cross modal overlap observed (Farias, et al., 2013).

Finally, because many studies examining the sensory basis of abstract concepts (e.g., valence, time, power, etc.) resort to experimental paradigms that may be interpreted as stimulus-response compatibility effects, the paradigms used in the current studies and the general findings we have obtained can be seen as a contribution for clarifying SRC effects. These findings can also be seen as potentially contributing a perspective to other domains in which abstract concepts have being arguably spatially grounded on the horizontal dimension.

CHAPTER FOUR:

CONVERGING MODALITIES GROUND ABSTRACT CATEGORIES: THE CASE OF POLITICS

[16]Three studies are reported examining the grounding of abstract concepts across two modalities (visual and auditory) and their symbolic representation. A comparison of the outcomes across these studies reveals that the symbolic representation of political concepts and their visual and auditory modalities is convergent. In other words, the spatial relationships between specific instances of the political categories are highly overlapping across the symbolic, visual and auditory modalities. These findings suggest that abstract categories display redundancy across modal and amodal representations, and are multimodal.

Key words: embodiment, grounded cognition**,** semantic representation; visual modality; auditory modality; cross modality convergence; politics.

The current research trend on embodiment demonstrates the diverse ways in which our representations of concepts result from embodied experiences that are activated during a concept's processing (e.g., Barsalou, 2008; Glenberg, 2008, 2011; Zwaan, 2004). This trend has emerged in contrast to views arguing that the meaning of symbols is non-perceptual and derived by their relation to other amodal symbols (e.g., Fodor, 1975; Kintsch, 1998; Landauer & Dumais, 1997; Pylyshyn, 1984).

Recent studies deriving from the embodiment perspective show that language comprehension involves the simulation and recruitment of neural systems used for perception, action, and emotion (e.g., Buccino et al., 2005; Fischer & Zwaan, 2008; Hauk, et al., 2004; Pulvermüller, 2005; Zwaan & Taylor, 2006). Considerable evidence supporting the embodied grounding of concrete concepts indicates that conceptual processing is facilitated by congruencies between movements implied by the concept and response movements, with congruent and incongruent spatial arrangements influencing response times or gaze movements (e.g., Setic & Domijan,

[16] This chapter is based on the paper Farias, A. R., Garrido, M. V., & Semin, G. R. (2013). Converging modalities ground abstract categories: The case of politics. *PLoS ONE, 8*(4), e60971.

2007; Estes, Verges, & Barsalou, 2008; Kaschak et al. 2005; Meteyard, Bahrami, & Vigliocco, 2007; Richardson & Spivey, 2000; Richardson, Spivey, Barsalou, & McRae, 2003; Zwaan & Yaxley, 2003).

This debate, has taken place predominantly with reference to concrete concepts, and has not touched another burgeoning area namely the grounding of abstract concepts, (cf. Semin et al., 2013a for a review). Abstract social categories such as power (Schubert, 2005), or categories related to affect (e.g., Crawford, et al., 2006) or time (e.g., Santiago, Román, & Ouellet, 2011) were shown to rely on spatial representations that provide relational structure to these domains (cf. Boroditsky, 2000; Boroditsky & Prinz, 2008). These studies not only show evidence for embodiment in conceptual processing, but may even give the impression that there is not much more to conceptual processing than the activation of embodied representations.

A more recent and conciliatory approach has started to acknowledge that conceptual processing is both linguistic and embodied (e.g., Barsalou et al., 2008; Louwerse, Jeuniaux, 2008; Louwerse & Jeuniaux; 2010; Louwerse & Van Peer, 2009; Zwaan, 2008; 2009). For instance, there is evidence that language encodes embodied relations (Louwerse, 2008; 2011). Consequently, language users might rely on language, on embodied relations, or on both and concepts can be represented in more than one modality.

While these demonstrations have been extremely valuable in opening new ways of thinking about how we represent different categories they have not informed us about whether the relational structure of a category holds across modalities. Nor has this work established the interface between symbolic representations and modal ones. Consequently, the question about the relationship between the relational structure of symbolic and visual as well as auditory representations of an abstract category has not been systematically examined.

The three studies reported in this paper were based on the argument that the relational structure representing an abstract category in one modality (e.g., visual) should overlap with the relational structure in a second modality (e.g., auditory). Moreover, the structure obtained in the two modalities should not diverge from the relational structure that holds in the symbolic representation of the category. We shall present the implications of this research for the ongoing discussion on the

embodiment of concrete and abstract concepts (e.g., Dove, 2009; 2011; Louwerse & Jeuniaux, 2008; 2010; Mahon & Caramazza, 2008; Semin et al., 2013a) in the concluding section of this paper.

4.1. OVERVIEW[17]

In the research we report, we use the political categories of left and right, demonstrably represented horizontally in space (Oppenheimer & Trail, 2010; van Elk, van Schie, Bekkering, 2010).

Study 1 examined the semantic properties of politically-charged words, namely the degree to which they represent a socialist or a conservative ideology. This gave us a graded anchoring of each term on a conservatism-socialism semantic dimension. Study 2 examined how these politically-charged words are visually distributed in space by analyzing how participants distribute them on a horizontal line. This furnished a graded visual spatial ordering of the same words. In Study 3 these words were presented over headphones with participants deciding on which channel the word was louder. This provided an auditory spatial representation of the same politically-charged words. We then examined the degree of overlap between the audio and visual anchoring of the concepts and their semantic counterpart.

The general hypothesis was that spatially grounded political terms should have a very significant degree of overlap across semantic, visual and auditory representations. Support for this hypothesis would suggest that abstract categories such as politics are multimodally grounded.

4.2. EXPERIMENT 1 - THE SEMANTICS OF POLITICS

[17] The stimulus materials and procedures of the current study can be found in Appendix C.

The purpose of this study was to obtain a graded semantic anchoring of each term of the socialism-conservatism dimension, thereby revealing the semantic spatial distances between the terms.

4.2.1. Method (Participants and Procedure)

Participants: Fifty-four university students (42 females, M_{age} = 24.22, *SD* = 6.70) voluntarily participated in this study.

All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

Stimulus Materials and procedure: A first group of participants (N = 65) was asked to generate 20 words associated with the concepts of socialism (10) and conservatism (10). The final list of 123 political-related words was rated by an independent group of participants (N = 54) regarding their political meaning on a seven-point scale (socialism to conservatism).

Additionally, participants evaluated the valence of the words to dismiss confounds between valence and the horizontal dimension (see Casasanto, 2009). Finally, they provided information regarding their general political awareness (interest, engagement, knowledge) and their own political orientation.

4.2.2. Results and Discussion

Socialism and conservatism-referent words were selected, based on: (1) the confidence intervals of each word (upper bounds below 3 = "socialist"; lower bounds above 5 = "conservative"); (2) the socialism and conservatism-referent words were overall neutral in valence; (3) their ratings on political meaning and valence were independent of participants' political awareness and political orientation.

The socialism-related words were: *Communism* (*M* = 1.90, *SD* = 1.43), *Revolution* (*M* = 2.50, *SD* = 1.38), *Union* (*M* = 2.67, *SD* = 1.40), *Proletariat* (*M* = 2.69, *SD* = 1.29), and *Demonstration* (*M* = 2.73, *SD* = 1.12); the conservatism-related

words were: *Stockmarket* (*M* = 4.88, *SD* = 1.47), *Consumerism* (*M* = 4.92, *SD* = 1.44), *Profit* (*M* = 4.92, *SD* = 1.22), *Wealth* (*M* = 4.96, *SD* = 1.27), and *Colonialism* (*M* = 5.08, *SD*= 1.64).

The difference between the political meaning scores' of socialism (*M* = 2.52, *SD* = .94) and conservatism-referent words (*M* = 4.95, *SD* = .99) was highly significant, $t(52) = 10.05$, $p < .001$.

4.3. EXPERIMENT 2 - SPACING OUT POLITICS

In a visual positioning task participants were asked to place socialism and conservatism-referent words on a horizontal line presented on the computer-monitor. We predicted that conservatism-referent words would be placed more to the right and socialism-referent words more to the left.

4.3.1. Method (Participants and Procedure)

Participants: Seventy-nine university students (50 females; M_{age} = 23.42, *SD* = 6.06) participated in this study for partial course credit. All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

Stimulus materials: The 10 political words obtained in the first study were used along with three neutral words introduced to reduce the political salience of the stimuli and to establish a baseline of comparison with the political words.

Procedure: Participants were seated in front of a computer monitor and asked to place the stimulus words on a horizontal line. The ends of this line were unmarked and there was only an indicator of the line midpoint. The words were presented in a random order on the center of the monitor. Participants' clicked on the line with the mouse to mark the position that they thought best suited each word. After the placement task the word disappeared and a second word was presented, and so on.

4.3.2. Results and Discussion

The horizontal line was transformed to represent a scale ranging from 0 (socialist) to 100 (conservative). The average spatial position scores for the three word sets differed significantly, $F(2,156) = 11.72$, $p < .001$, $\eta_p^2 = .131$, indicating, as predicted, that conservatism-referent words were placed more to the right ($M = 54.04$, $SD = 16.64$) of the horizontal line compared to socialism-referent words ($M = 39.95$, $SD = 19.22$) with the neutral words in between ($M = 47.65$, $SD = 13.22$).

The comparisons between socialism vs. neutral, $t(78) = -2.68$, $p < .009$; conservative vs. neutral, $t(78) = 3.16$, $p < .002$; socialism vs. conservative $t(78) = -3.89$, $p < .001$, were all significant.

Further analysis indicated that socialism and conservatism-referent words differed significantly from the scale midpoint, $t(78) = -4.65$, $p < .001$, and $t(78) = 2.16$, $p < .034$, respectively.

The absolute distance of socialism-related words was skewed more to the left of the midpoint ($M = 10.05$, $SD = 19.22$) than conservatism-related words were skewed to the right ($M = 4.04$, $SD = 16.64$). This difference was significant, $t(78) = 3.89$, $p < .001$, and may correspond to a bias derived from the habitual writing direction, namely from left to right (Maass & Russo, 2003; Maass, Pagani, & Berta, 2007).

Finally, we tested the convergence between the semantic and visual representations with a linear regression on the spatial ranked scores of the political-referent words in this study with the ranked semantic ratings obtained in Study 1 as predictor. As expected, the systematic order of the political meaning of the stimuli predicted their horizontal spatial position observed in the visual task, $\beta = .839$, $t(9) = 4.36$, $p < .002$ ($R^2 = .704$). Thus, the more conservative the political meaning of the words is, the more the words were placed to the right and the more socialist the meaning the higher the bias in placing them towards the left (Figure 1).

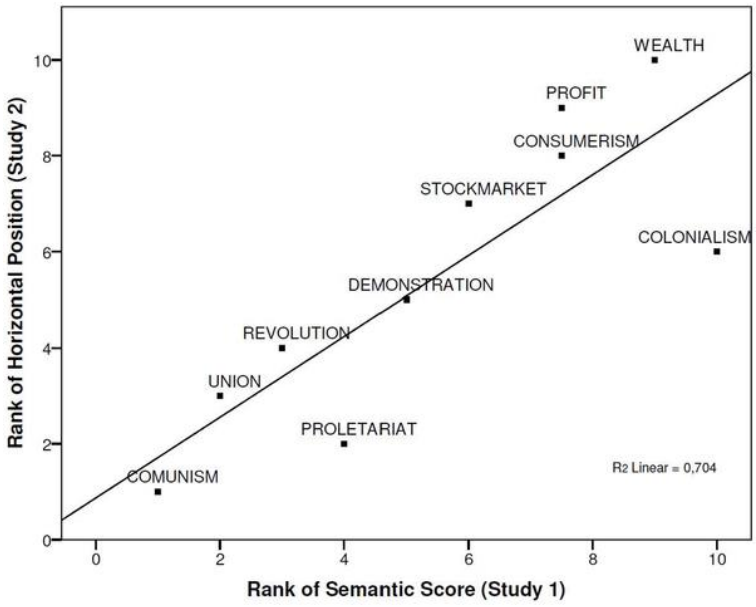

Figure 1. Ranked semantic judgments of the political stimuli in Study 1 plotted against their ranked horizontal position in Study 2.

These results indicate that the semantic and visual grounding of words associated with distinct political positions display a remarkable overlap. Does this pattern of results generalize to another modality? In order to answer this question we turned to examining the same spatial-semantic ordering in the auditory modality.

4.4. EXPERIMENT 3 - THE SOUND OF POLITICS

Study 3 employed an auditory disambiguation task (cf. Lakens et al., 2011a). Participants were presented with a list of words over headphones and had to indicate on which ear, each presented word sounded louder. Consistent with the earlier two studies, we predicted that, on critical trials, namely when a word was presented equally loud on both auditory channels, conservatism-referent words would be disambiguated more to the right than socialism-referent words. The neutral words were expected to be equally disambiguated to the left or right ear.

4.4.1. Method (Participants and Procedure)

Participants; One hundred fourteen university students (55 females; M_{age} = 20.41, *SD* = 2.19) participated in this study for partial course credit.

All procedures were executed in compliance with relevant ethical guidelines and were approved by the ethics committee. All participants gave written informed consent for their participation.

Stimulus materials and procedure: The words used in Study 1 were converted to sound files using a text-to-speech application (AcapelaBox). Participants seating in front of a computer-monitor, and wearing headphones were asked to indicate on which ear each word presented was louder by pressing a response key. The keys were aligned vertically and were counterbalanced. In total there were 78 trials. In critical trials (39) each word was presented three times equally loud on both auditory channels. In the remaining trials words were presented randomly with different volumes (100%, 50%) to the left and the right auditory channels.

4.4.2. Results and Discussion

Because left and right auditory judgments are mutually dependent, we calculated the average percentage of times each critical word was judged to be louder in the right ear, with .50 indicating an equal number of left and right channel judgments, and 1.00 indicating only right-ear judgments. Response key assignment did not influence the results.

As predicted, a within-participants ANOVA with three levels (conservatism vs. neutral vs. socialism) revealed that, on critical trials, average right ear disambiguation differed as a function of the words' political meaning; $F(2,226) = 10.19$ $p < .001$, $\eta_p^2 = .083$. The expected linear trend indicated that participants were more likely to judge conservatism-referent words to be louder on the right ear (*M* = .60; *SD* = .23), than neutral (*M* = .56; *SD* = .26), than socialism-referent words (*M* = .52; *SD* = .22).

The comparisons between socialism vs. neutral, $t(113) = -2.37$, $p < .020$; conservatism vs. neutral, $t(113) = 2.18$, $p < .032$; and socialism vs. conservatism, $t(113) = -4.50$, $p < .001$, were all significant.

Notably, the observed disambiguation was not symmetrical. The overall pattern was skewed to the right reflecting a general bias due to hemispheric asymmetry with verbal information presented to the right ear being processed more efficiently (e.g., Belin et al., 1998; Kimura, 1961).

As expected, for the remaining trials, words that were clearly presented to a particular auditory channel (100% and 50% volume) revealed no biases in channel disambiguation (conservatism words: right-channel, M = .92, SD = .12; left-channel M = .93, SD = .16, $t(113)$ = .107, p < .915); socialism words: right-channel M = .92, SD = .13; left-channel M = .92, SD = .14, $t(113)$ = -.313, p < .755); neutral words: right-channel M = .85, SD = .29; left-channel M = .89, SD = .27, $t(113)$ = 1.302, p < .196).

These findings are particularly important as they show that although the task of indicating on which channel the word was louder could prompt associations between the word meaning (socialism, conservatism) and the left/right auditory channels, participants showed almost perfect accuracy in indicating the channel where the word was presented louder, regardless its political meaning.

A linear regression revealed, as expected, that the systematic order of the semantic meaning of the stimuli predicted their right ear disambiguation, β = .655, $t(9)$ = 2.45, p < .04 (R^2 = .430). Thus, the more conservative the political meaning of the words, the more often these words were disambiguated to the right ear (Figure 2) indicating a remarkable convergence between the semantic and auditory rank ordering of the political terms. This mirrors the results of study 2 where a systematic overlap between semantic meaning and visual spatial position was observed.

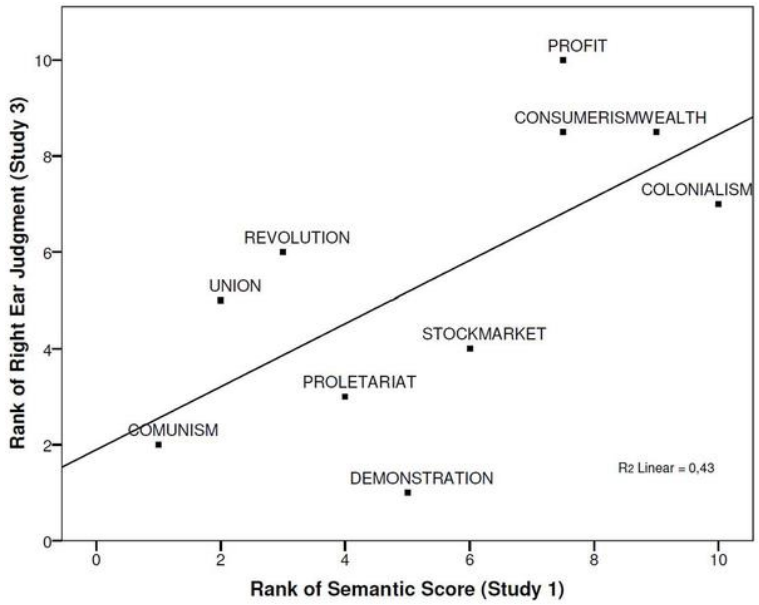

Figure 2. Ranked semantic judgments of the political stimuli in Study 1 plotted against their ranked percentage of right ear judgments in Study 3.

To demonstrate the cross-modal convergence we conducted a further regression analysis between the rank ordering obtained in the visual task (Study 2) and the rank ordering resulting from the auditory disambiguation (Study 3). As expected, the spatial position of the stimuli (Study 2) predicted the auditory right ear judgments (Study 3), $\beta = .760$, $t(9) = 3.31$, $p < .011$ ($R^2 = .577$). This pattern of results clearly indicates a substantial overlap between the spatial mapping of political words in the visual and auditory tasks (Figure 3). The more participants positioned politics-referent words to the right (Study 2), the more often these words were judged to be louder on the right channel (Study 3). This study constitutes the last element in the semantic, visual and auditory representation chain.

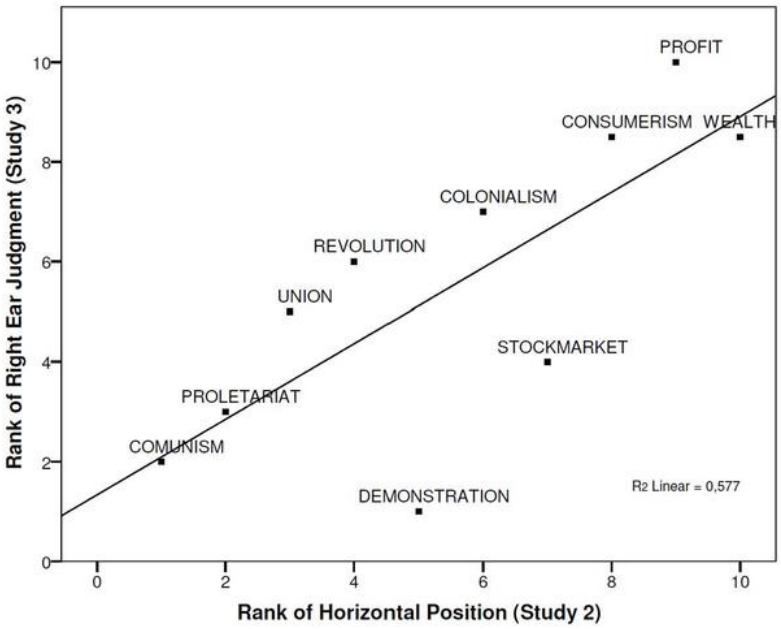

Figure 3. Ranked horizontal position of the political stimuli in Study 2 plotted against their ranked percentage of right ear judgments in Study 3.

4.5. GENERAL DISCUSSION

Taken together these three studies reveal that the symbolic representation of an abstract category is also anchored in visual and auditory modalities. Furthermore, the three studies reveal a remarkable overlap between the three different representational orderings.

While it is possible to argue that the specific judgments in the semantic study and the visually driven placements in Study 2 are consciously produced, it is difficult to advance the same argument for Study 3. A process that escapes conscious access drives auditory disambiguation and it is unlikely that participants were aware of the systematicity they were producing. Nevertheless the overlap between the semantic, and the visual and the auditory tasks is remarkably high, sharing 70% and 43% of common variance respectively. This suggests that the multimodal representation of

political concepts is highly homogeneously integrated.

Central to the research we have reported so far is the convergence between the three studies. We find that a spatial schema that is transmitted in a culture grounds political positions visually and auditorily. Moreover, the transduction is remarkable because it maintains the same spatial gradation across the semantic–symbolic representation and the visual and auditory modalities.

In fact, we suggest that the distinction between symbolic and modality specific representations is most likely a mere analytic distinction that is experimentally induced rather than real. Obviously, the abstract category of political orientation is a multimodal representation whereby the distinction between semantic, visual and auditory constitutes different perspectives on the same representation. This is underlined by the remarkable average common variance (57%) between the three studies that have tapped on how political concepts are represented.

The broader ramifications of the current research are pertinent for the debate on how well embodiment accounts (e.g., simulation) deal with concrete (e.g., to kick, to pick, to lick) and abstract categories (e.g., morality, time, politics).

Different authors adopt somewhat critical (Dove, 2009; 2011; Louwerse & Jeuniaux, 2008; 2010; Mahon & Caramazza, 2008) but essentially convergent perspectives. At the one extreme are views (e.g., Dove, 2011) that regard language as a form of "dis-embodied" cognition, in particular with reference to abstract concepts. Dove (2009) argues that an embodiment approach has 'limited reach' when it comes to abstract concepts (e.g., Dove, 2009; p. 428).

The research we present here challenges this conclusion. An abstract category such as the politically charged socialist-conservative dimension is clearly multimodally grounded. In fact, the systematicity by which political concepts are represented visually and auditorily reflects the same regularity that is observed semantically. This suggests that there is a convergent and highly redundant regularity in the way in which abstract concepts are represented.

In concluding, we argue that the representation of concepts, concrete or abstract, is multimodal. Any single modality by which we capture the structure of a concept is likely to be reproduced in other modalities by which a concept can be represented, including what we regard as its symbolic representation. In fact, one

provocative conclusion of the research we report here is that the claim that there is an opposition between symbolic representational and modality specific representations is misleading at best. Representations of concepts are multimodal and inseparably interwoven with their linguistic representations.

CHAPTER FIVE:

A FEW ANSWERS AND MANY OPEN QUESTIONS

In this chapter we review our main questions, as well as our specific goals and hypotheses, and discuss the significance of the empirical findings presented in the preceding chapters in addressing those questions. Then, we identify some of the limitations of our work and advance some possible experimental ways to overcome them. Finally, we outline the implications of our work for the broader theoretical advancement of concept representation namely their potential for generalizing beyond this research to other concepts as well as some applications of our findings in more applied domains.

5.1. A Few Answers

The main goal of the present research program was to examine the grounding of abstract concepts, namely political concepts associated with left (socialism) and right (conservatism) political orientations and how this spatial representation affects the processing of politics-related stimuli.

The way people represent knowledge has been puzzling researchers for a very long time. As reviewed in the introduction, two major views on the representation of concepts can be identified among cognitive scientists. One set of views is committed to the assumption that we process amodal symbols in a way that is detached from sensorimotor or affective states. The other set of views emphasizes that cognition is embodied and situated, thus largely dependent on bodily and contextual constraints (cf. Semin et al., 2013a for a review).

Our research is in line with the second view and is conceptually framed by an embodied view of cognition based on the argument that both concrete and abstract concepts are grounded in sensorimotor processes (e.g., Barsalou, 1999, 2008; Glenberg & Robertson, 2000; Prinz, 2002). This constituted our perspective upon how specific concepts related to politics are grounded.

The research reviewed on the grounding of abstract concepts, particularity the work derived from the CMT (e.g., Lakoff & Johnson, 1980; 1999), emphasizes the importance of pairing abstract concepts with concrete physical experiences for a metaphor to emerge.

However, we argue that it is unlikely that people are chronically exposed to politically abstract discourse jointly with physical spatial experiences. As referred in the introduction, although the diverse discourses in which these ideological viewpoints are articulated may have the occasional concomitant sensorimotor experience that is spatially anchored to the left or right, the associations between dichotomic political ideologies and left-right spatial referents are above all present in our linguistic ecology (Semin, 2011).

In Chapter Two, we report three experiments designed to examine whether the opposing political categories of left and right are spatially anchored on the horizontal dimension even when non-linguistic stimuli are at stake. The results of these experiments indicate that a horizontal spatial dimension structures the representation of stimuli associated with the political left and right. In a free ordering task, participants placed photographs of conservative politicians more to the right relative to their positioning of socialist politicians. When photographs of politicians were presented equally frequently on the right or left side of the monitor participants remembered conservative politicians as having been presented more often on the right side and socialist politicians as having been presented more often on the left side. Finally, participants were faster in categorizing politicians as conservative when they were presented on the right side of the monitor (and vice versa).

The consistent pattern of these findings underlines the general argument that representational associations between politicians' party membership and spatial referents have processing implications across different tasks inviting different inferential processes. Moreover, these results lend additional support to previous findings (van Elk, et al, 2010; Farias et al, 2013; Oppenheimer & Trail, 2010) suggesting that the polar opposites "left" and "right" are spatially represented.

Importantly, the present research was designed not merely to further demonstrate how politics-related stimuli are spatially grounded but also to identify the role of moderators that may shape these representations, namely political orientation and political awareness of participants. The role of these moderators in shaping the representation of political stimuli may add to our knowledge of the nature of these associations. Specifically, our results reveal that the association between spatial dimensions and political position holds irrespective political preferences. This suggests that the activation of spatial metaphors is independent of one's sociopolitical position. The independence of activating spatial metaphors from the political orientation of the participants may reflect an important functional property of metaphorical thought, which is important for efficient communication – concepts must retain their connotations irrespective of individual differences due to political orientation. For example, despite of one's political preferences one can think and talk about political concepts with reference to the same conceptual metaphors.

The arbitrary nature of the spatial political metaphor is further documented by the moderation of political awareness. Participants who were politically more aware either placed the politicians in a more polarized way on the horizontal dimension (Experiment 1) or were faster in classifying the politicians in the respective conservative vs. socialist categories (Experiment 3). These findings indicate that if you do not have the metaphor, then you do not process information in the same way.

Another important feature of these experiments has to do with the nature of the stimulus materials we have used. So far, the role of space in grounding abstract concepts has been examined predominantly with linguistic stimuli. The experiments reported in Chapter Two show that the association between politics-related stimuli and the horizontal space is independent of the linguistic nature of the politically laden stimulus materials used. In other words, our studies provide evidence that some abstract concepts, at least those related to politics, are represented spatially regardless their linguistic nature, leaving open the possibility that the spatial relationship between political categories and the horizontal space is activated by symbolic, but also by modal representations. We further explored this question in Chapter Four.

Importantly our experiments also addressed some methodological issues that remain open in previous research on the spatial grounding of politics to alternative explanations. In fact some of the findings derived from research addressing the spatial grounding of abstract concepts, namely the concepts of time and even politics (including some of our own studies) may be explained by stimulus-response compatibility effects (e.g., Proctor & Cho, 2006).

Notably, the type of tasks most of this research has been using involves spatial congruency between the label of the stimuli (e.g., political left or right) and hand or key used to provide the response (e.g., spatial left or right). Moreover, even when evident stimulus-response compatibility effects are disentangled, the stimulus-response labels can still be overlapping (e.g., classify "left" and "right"-wing stimulus as "socialism" or "conservatism"-related).

Across some of our studies we tried to avoid this confound. For example the task involved in Experiment 1 reported in Chapter Two requires a free placement of political stimuli without any specific reference to left or right response label. In Experiment 3, reported in Chapter Two as well as in Experiment 3 reported in Chapter Four, we used vertically aligned response keys that are orthogonal to the left-right dimension. Notably, in this last experiment, although the response label was left or right, the response referred to loudness judgments, which are unrelated to political labels.

It is however in Chapter Three that we present two studies that directly address this alternative account by requiring responses to linguistic political stimuli in the absence of convergence between the spatial label of the stimuli (political left / right) and the spatial labels of responses (left / right). In Experiment 1 participants were faster classifying political stimuli as conservative when they were presented on the right, and vice versa for socialism-related stimuli in the absence of a left-right button press and regardless of using the left or the right hand to provide the response. Nevertheless as the response labels of "conservatism" and "socialism" could still be represented as "right" / "left" response labels we conducted a second study where these labels were completely absent. Results from Experiment 2 indicate that political conservatism-related stimuli presented to the right auditory channel were classified faster as "words" than when presented to the left auditory channel.

These results further support the idea that political-related stimuli focus people's attention to the right and the left, independent of response congruency effects as the nature of the lexical decision task does not require any type of classification according to the political (spatially polarized) labels.

Overall, the results of these two experiments suggest that the association between the political categories of left and right and left-right spatial referents do not result from the possibility that political information primes a response code, and that the systematic spatial differentiation persists in the absence of structural overlap in stimulus-response mappings.

One particularly important issue for the simulation argument when talking about the sensorimotor grounding of concepts is the assumption that concepts retain multimodal perceptual features of objects and that, consequently, conceptual processing involves the activation of modality-specific sensory brain areas (cf. Martin, 2007). However, most of the research addressing the grounding of abstract concepts has been focused on a single modality. In line with the assumption of embodied cognition, we argue that concepts are multimodaly grounded. If that is the case, then the relation between political concepts and space should be observed across semantic, visual and auditory modalities.

In Chapter Four, we examined the grounding of abstract political concepts across two modalities (visual and auditory) as well as their symbolic representation to determine whether the spatial relationships between specific instances of the political categories overlap across the symbolic, visual and auditory modalities.

In a first stage, we obtained a graded semantic anchoring of a set of political terms of the socialism-conservatism dimension, to obtain the semantic spatial distances between the terms. In a visual positioning task, conservatism-referent words were placed more to the right and socialism-referent words more to the left of an unmarked horizontal line. In an auditory disambiguation task, namely when a political word was presented equally loud on both auditory channels, conservatism-referent words were disambiguated more to the right than socialism-referent words. Taken together these three studies reveal that the symbolic representation of an abstract category is also anchored in visual and auditory modalities.

Furthermore, the three studies reveal a remarkable overlap between the three different representational orderings. That is, the systematic order of the political meaning of the stimuli predicted their horizontal spatial position observed in the visual task as well as the corresponding auditory channel disambiguation. Moreover, the spatial position of the stimuli predicted the auditory right ear judgments indicating a substantial overlap between the spatial mapping of political words in the visual and auditory tasks.

These results suggest that the representation of political concepts is multimodal and highly homogeneously integrated as the results documented so far show that the terms maintain the same spatial gradation across the semantic–symbolic representation and the visual and auditory modalities.

5.2. Open Questions and Future Research Avenues

The different approaches that have been advanced regarding knowledge representation vary with respect to their reliance on the role of sensorimotor processes and can be placed on a continuum from purely disembodied accounts of cognition to purely embodied accounts (e.g., Wilson, 2002).

The claim advanced for the former position is that cognition is completely symbolic and amodal (e.g., Dennett, 1969, Fodor, 1975). The latter argue that cognition is completely grounded in the sensorimotor system (e.g., Barsalou, 1999). And of course, there are theories both from philosophers (e.g., Dove, 2009, 2011; Machery, 2007, 2010) and neuroscientists (e.g., Mahon & Caramazza, 2008) that propose solutions that occupy the middle range on the continuum from purely 'embodied' to purely 'amodal and representational' (e.g., Barsalou et al., 2008; Dove, 2009, 2011; Mahon & Caramazza, 2008).

Another take on these issues is not to determine whether concepts are modal or amodal, but rather to what extent do we use reenacted perceptual representations in cognition and to what extent do we use amodal representations (Machery, 2007). Our

studies seem to suggest that the grounding of abstract concepts, at least those related to politics, involve both types of representations.

Results from the first three experiments show for example, that the associations between opposite political views and horizontal space, which is commonly expressed in language, can be observed in the absence of linguistic materials or responses. Of course this conclusion is open to criticism. As Crawford and colleagues (2006) argue these kinds of experimental tasks, like many of those involved in our daily lives, may never be purely non-linguistic since people may covertly code stimuli or responses in linguistic terms. Therefore, it is possible that despite dealing with nonlinguistic stimuli, participants may have transduced them to semantic representations. In fact, it can be argued that even tasks that require fast processing (e.g., Experiment 3 of Chapter Two) may leave the operation of different cognitive processes open, namely allowing the activation of the motor system to be mediated by the retrieval of 'abstract' conceptual content (cf. Mahon & Caramazza, 2008). In this sense, the three first studies albeit indicative, do not provide a definitive answer to whether the grounding of abstract concepts involves purely modal processes (cf. Dove, 2009, 2011; Machery, 2007; see also Barsalou et al., 2008).

However, the experiments reported in Chapter Four provide results that seem more conclusive, namely the observed convergence between the results from three experiments. Overall these experiments show that a spatial schema that is transmitted in a culture grounds political positions semantically, visually and auditorily. Based on these finding we argue that the distinction between symbolic and modality specific representations is most likely an analytic distinction that is experimentally induced rather than real. As the findings reported in Chapter Four indicate, the abstract category of political orientation is multimodally represented with the distinction between semantic, visual and auditory modalities constituting different perspectives on the same representation. Possibly the same is true for other abstract concepts.

Another issue that deserves further investigation is the possible confounds derived from stimulus-response compatibility effects. In fact, most of our experiments, as well as previous work on the spatial grounding of politics (and other abstract concepts), are open to alternative accounts namely that the left-right political

orientation of the stimuli merely primes the left-right response codes, the latter being left-right button, left-right hand or left-right response label.

In some of the experiments, vertically aligned keys were used, in other studies the response did not imply a specific left-right label. Still other experiments controlled the hand used to provide the response. Finally, in one of the experiments the response did not include any response code or label that could be associated with left-right. Nevertheless, and despite the difficulty of disentangling such a potential confound, more creative designs are required to avoid stimulus-response overlap.

In Chapter Two we examined the role of moderators in shaping the spatial representation of politics. It was interesting to show that despite political orientations the spatial metaphor is the same. We highlight the functional role of this finding in allowing people with different political ideologies to communicate about politics.

However, our sample only included Portuguese and Dutch participants. These are countries where multiple political parties are represented in the parliament, and for some of them it is not completely clear where they fall in the political continuum. It would interesting to examine the same moderator in different cultures namely those where left-right political continuum is even less salient (for example in countries with single-party regimes), or in those where polarization is highly salient (Democrats vs. Republicans).

We also examined political awareness and showed that the spatial grounding of politics is particularly salient in those that are more politically aware. It would also be interesting to run our experiments comparing more differentiated degrees of political awareness. Namely for the extreme case, to recruit actual politicians or members of political youths (e.g. Young Democrats) who, compared to our sample of university students, are likely to be more politicized and therefore present even more polarized results.

Another possible avenue can be the identification of other moderators, namely individual and cultural differences that shape the way these associations are established. For example, research has shown that there are distinctive culturally specific and created categories from target categories that are universal but nevertheless relate source and target in culturally specific ways (like time, cf.

Boroditsky & Gaby, 2010; Semin & Manstead, 1983). Therefore for some individuals, or specific cultures space can anchor political ideologies in a different way.

It is possible to assume that the vertical spatial dimension can ground the political party that is currently in charge, with that political orientation being represented "up" for example. It would also be interesting to examine the possibility of whether the authoritarian–libertarian continuum (e.g., Stubager, 2008) becomes evident in vertical spatial associations, with faster up-responses to authoritarian politicians and faster bottom-responses to libertarian politicians (Schubert, 2005).

Based on the body of knowledge on power (Schubert, 2005), agency (Maass et al., 2007; Spence & Helmreich, 1978) valence (Meier et al., 2004), affect (Meier & Robinson, 2004; 2005) and aesthetical preferences (Chokron & De Agostini, 2000), and attention (Heron, 1957; Elkind & Weiss, 1967) it would be interesting to explore how people perceive for example, unknown politicians as a function of their spatial location. We expect that such spatial positioning will influence perceived power, agency, beauty, friendliness, and likeability of these persons, among others.

Moreover, the same abstract concept can be grounded in different concrete sources. In other words, more than one concrete domain (other than space, in the case of politics) can be used to define an abstract concept – for example, *life is a journey* but also *life is a gambling game*, etc. In the current work we did not explore this possibility. In the case of politics, these multiple sources could include color (e.g., red for Republicans and Blue for Democrats), or other source categories like rigidity, importance (weight), or other physically detectable attributes.

For example, recent studies conducted in the United States (Olivola & Todorov, 2010; Rule & Ambady, 2010) and an even earlier study in the United Kingdom (Jahoda, 1954) provide evidence that the membership of politicians in one of two political parties (e.g., Democrats and Republicans in the United States) can be discriminated above chance just by their looks. These judgments seem to be driven by superficial cues that may be associated with the party image (e.g., age, clothing, specific symbols) but unrelated to personal political dispositions (see Wänke, Samochowiec, & Landwehr, 2012, for a review). Moreover, recent studies have shown that people are able to identify left-wing or right-wing political attitudes from

looks alone. This was true even when photographs without clothing cues were shown. Apparently political attitudes manifest in faces, and people can read these differences. This ability to detect ideology may be at least partly explained by perceived dominance (Samochowiec, Wänke, & Fiedler, 2010). Nevertheless other concrete sources may be involved in grounding politics that may be identified in future research.

Finally, although the results presented in this work appear to be promising in documenting and explaining the spatial grounding of politics, political cognition is far more complex and subtle than a gross characterization of the political left or right. Political thinking involves a consideration of conservatism, socialism, but also considerations about a party's stand on economic issues, social welfare, immigration, minorities, abortion, etc. It also involves historical and cultural differences, namely previous positions of particular parties as well as the current standing of their leader on these issues.

In other words, politically related information is far more complex that the one conveyed by politicians' pictures or politically-related words. Moreover, the concept of politics itself is multidimensional, and accordingly the spatial distinction between left and right is by no means an approximation of the complexity of political thought (van Elk et al., 2010). Therefore more research is required to capture the multidimensional and complex nature of political thinking.

5.3. IMPLICATIONS

5.3.1. Support and extend previous research

The primary contribution of the current research lies in its invitation to consider additional variables in a broader framework about the source-target or concrete – abstract relationship, or the way we conceptualize metaphor driven comprehension and representation of abstract concepts.

In the work presented here, we documented the associations between political opposites and horizontal spatial locations by using linguistic and nonlinguistic stimulus materials across different cognitive tasks tapping different inferential processes, providing further support to previous findings is this domain. We have also identified the role of moderators that may shape these representations, namely political orientation and political awareness of participants, and showed that the link between political concepts and the horizontal space is not driven by stimulus-response compatibility effects. Additionally, we reported a group of studies conducted in different sensory modalities, namely visual and auditory modalities.

It is our expectation that this may add generalizability to findings suggesting that the political categories of left and right are represented horizontally in space and extend the growing body of research on spatial representation of abstract concepts.

5.3.2. For concept representation

Additionally, the broader ramifications of the current research, are relevant to the debate on how well embodiment accounts (e.g., simulation) deal with concrete (e.g., to kick, to pick, to lick) and abstract categories (e.g., morality, time, politics).

The research to date does not furnish a unified theoretical perspective on how the processes involved in grounding concrete and abstract concepts are possibly integrated. As we reviewed in the introduction, different authors adopt somewhat critical (Dove, 2009; 2011; Lowers & Juneau, 2008; 2010; Mahon & Caramazza, 2008) but essentially convergent perspectives. Among these we can find extreme views (e.g., Dove, 2011) that regard language as a form of "dis-embodied" cognition, in particular with reference to abstract concepts. This invites the possible argument that two or more processes are co-activated to varying degrees in the grounding of concepts, depending on the nature of the concept.

The research we present here supports this conclusion. An abstract category such as the politically charged socialist-conservative dimension is clearly multimodally grounded. In fact, the systematicity by which political concepts are represented visually and auditorily reflects the same regularity that is observed semantically. This suggests that there is a convergent and highly redundant regularity

in the way in which abstract concepts are represented across semantic and auditory and visual modalities.

These results suggest that the representation of concepts, concrete or abstract, is multimodal. Any single modality by which we capture the structure of a concept is likely to be reproduced in other modalities by which a concept can be represented, including what we regard as its symbolic representation. In fact, one challenging conclusion of the research we report here is that the claim that there is an opposition between symbolic representational and modality specific representations is misleading at best. Representations of concepts are multimodal and inseparably interwoven with their linguistic representations.

5.3.3. Possible applications

Documenting that the horizontal dimension grounds the concrete physical basis for the representation of political orientations suggests a socially relevant application of the general framework guiding this research program. The implications of the spatial presentation of political stimuli in newspapers, magazines and other types of public media are potential applications of this line of research to advertising and political marketing.

Research is already available documenting that people can make decisions about a political candidate based on superficial trait inferences after a mere 100 ms exposure to the candidate's face (Todorov & Willis, 2006). Further, voting decisions can be influenced by incidental priming based on the location of the polling station (Berger, Meredith, & Wheeler, 2008) and even seemingly trivial details such as the order of candidates' names on a ballot can impact elections (Krosnick, Miller, & Tichy, 2004; see Oppenheimer & Trail, 2010 for a review). Our results provide further evidence that the way people represent politics does not necessarily derive from rational considerations.

Obviously, we are not arguing that a voter with strong conservative convictions will vote for the socialists based on spatial cues experienced during a political campaign or at the voting section. However, considering that research has suggested that many voters have malleable political attitudes (Converse, 2000), and to

the extent that spatial metaphors selectively activate political ideology, spatial orientation could influence political attitudes. Moreover, spatial metaphors may still have implications for electoral outcomes (see Oppenheimer & Trail, 2010) if one considers that the percentage of ambivalent and undecided voters in two of the past three US presidential elections was greater than the eventual margin of victory a day before the election (Pew Research Center, 2000, 2004).

5.4. CONCLUSION

The research presented in the current work provides interesting insights into the representation of an abstract concept namely by showing the significance of space in grounding the representation of political information. Additionally, it opens interesting possibilities for future research on the representation of abstract concepts as well as for more applied research endeavors.

We resorted to an arbitrary spatial anchoring established in the eighteen century and showed how it still shapes our representation and inferences of political stimuli. Like other abstract concepts, political categories are mostly the result of linguistic associations that are often derived and reinforced by interaction between body morphology and the physical environment, which are powerful enough to structure the nature of the types of inferences made, namely the way our perception, memory and classification processes are driven.

Documenting the spatial grounding of an abstract concept such as politics may constitute an important contribution, and a necessary first step. However, there is little to be gained from extending the strategy to the abundance of social concepts and related metaphors. Alternatively, in this work we examined the way people represent politics in varied set of situations and contexts in which the spatial grounding of politics is likely to occur as well as the role of potential moderators of the relation between politics and space. Specifically, we investigated the associations between political opposites and horizontal spatial locations using different types of stimuli across different cognitive tasks tapping different inferential processes and sensory modalities.

It is our expectation that this may add generalizability to findings suggesting that the political categories of left and right are represented horizontally in space and extend the growing body of research on spatial representation of abstract concepts.

One of the major challenges in taking an embodied approach to abstract concepts is the lack of direct sensorimotor experiences they afford. This makes it more difficult to investigate whether they can nevertheless be represented via sensorimotor simulations.

In fact, our work only presented behavioral evidence, without specifying the precise brain mechanisms that underlie the observed effects. There is already some neural data supporting the idea that abstract concepts are grounded in sensorimotor representations, but nothing regarding political concepts. To fill in this epistemic gap it is necessary to address the next challenge namely to engage in research endeavors towards building a brain map that documents the link between the target concepts of politics and its concrete grounding.

In sum this work raises more questions than the answers it provides regarding the grounding of abstract concepts. Nevertheless it represents an important step in documenting and specifying some of the processes involved in the grounding of an abstract concept, the grounding of politics in space.

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APPENDICES

APPENDIX A (PILOT STUDY AND EXP. 1, 2 & 3 – CHAP. 2)

Pilot study of the stimuli (photos)

Curso: Ano: Sexo: Idade:

Por favor indique o <u>nome</u> da pessoa da foto e se, na sua opinião, a pessoa é "Nada Conhecida" ou "Muito Conhecida" e ainda se, politicamente, é "Mais à Esquerda" ou "Mais à Direita", colocando uma cruz no quadrado respectivo.

[Course: Year: Gender: Age:

Please write the name of the person in the photo and if in your opinion, the person is "Not at all known" or "Very known" and also if, politically, the person is "More Left-Wing" or "More Right-Wing" by placing a cross in the respective box.]

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
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Nada conhecido								Muito conhecido
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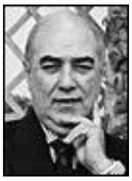
NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita



NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

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Mais à esquerda								Mais à direita

NOME:								
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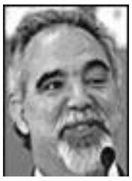
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita



NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

Responda por favor às seguintes questões indicando a sua resposta com uma cruz no quadrado respectivo.
[Please answer the following questions indicating your answer with a cross in the respective box.]

Qual o seu interesse pela política?
[What is your interest in politics?]

Nenhum interesse — Relativo interesse — Muito interesse

Qual a importância que atribui à política na sua vida?
[What is the importance of politics in your life?]

Nenhuma importância — Relativo interesse — Muita importância

Quando está com pessoas amigas, com que frequência discute assuntos políticos?
[When you're friends, how frequently you discuss political matters?]

Nunca — Às vezes — Frequentemente

Para cada uma das diferentes formas de acção política indique se alguma vez fez, se não fez, mas admite fazer ou se não fez e não admite fazer: [For each of the different forms of political action indicate if you ever engaged, never engaged but admit to do it, never engaged nor admit to do it:]

	Não e não admite fazer			Não, mas admite fazer			Sim
Assinar uma petição/ abaixo-assinado [Sign a petition]							
Participar numa manifestação [Participate in a demonstration]							
Fazer greve [Go on strike]							
Contactar político/governante (rua/carta/email) [Contact a politician (street/letter/email)]							
Votar nas eleições [Vote in elections]							
Filiar-se num partido político [Join a political party]							
Participar num debate político [Participate in a political debate]							
Ver/ouvir debates/entrevistas políticos [See/ hear political debates/interviews]							
Escrever uma carta para um jornal [Write a letter to a newspaper]							

Indique, se cada uma das seguintes afirmações representa mais uma política de esquerda ou de direita. Indique a sua resposta com uma cruz no quadrado respectivo [Indicate whether each of the following statements represents the political left or right. Indicate your answer with a cross in the respective box]

A liberdade e a igualdade são importantes, mas se tivesse que escolher entre as duas, escolheria a igualdade, ou seja, que as diferenças entre as classes sociais não sejam tão acentuadas.
[Freedom and equality are important, but if I had to choose between the two, I would choose equality, i.e., that the differences between social classes are not as pronounced.]

Representa posição mais à esquerda								Representa posição mais à direita

A competição é uma coisa boa, estimula as pessoas a trabalharem mais e a desenvolverem novas ideias.
[Competition is a good thing, encourages people to work harder and develop new ideas.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia controlar mais as empresas.
[The state should have more control over the companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Se as pessoas querem educação deverão trabalhar muito para a conseguir e não esperar que o Estado se encarregue disso.
[If people want education they should work hard to achieve and not expect the state to take care of it.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia ser responsável pelas pensões/reformas de todos.
[The state should be responsible for everyone's retirement / pensions.]

Representa posição mais à esquerda								Representa posição mais à direita

Os impostos deveriam ser reduzidos ao mínimo, quer para os cidadãos quer para as empresas privadas.
[Taxes should be reduced to a minimum both for citizens and private companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Em política as pessoas falam de esquerda e direita. Como se situaria, quanto às suas posições políticas, nesta escala: [In politics people talk of left and right. How do you stand regarding your political positions on this scale:]

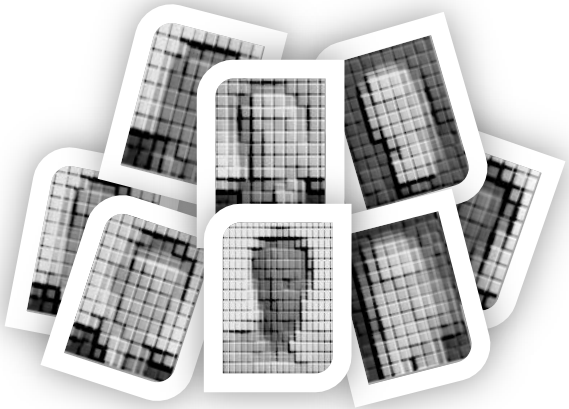
Mais à esquerda								Mais à direita

Experiment 1

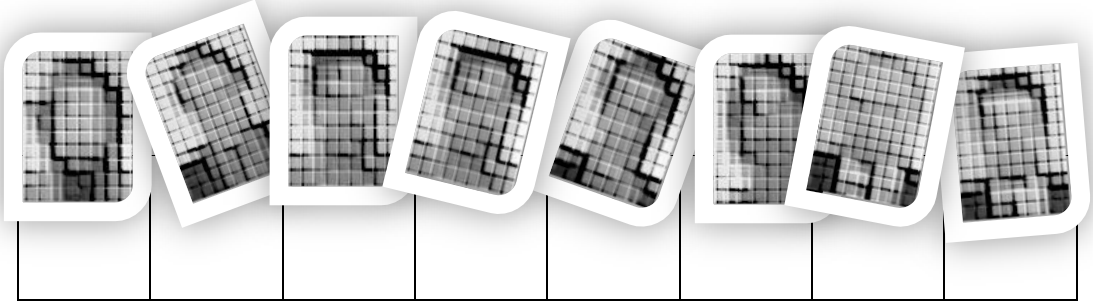
Stimulus materials

Set 1 (6 targets + 2 fillers)		Set 2 (6 targets + 2 fillers)	
Socialist politicians	*Conservative politicians*	*Socialist politicians*	*Conservative politicians*
[Miguel Portas]	[Mota Amaral]	[Francisco Louçã]	[Santana Lopes]
[Jerónimo de Sousa]	[Marques Mendes]	[Bernanrdino Soares]	[Manuela Ferreira Leite]
[Manuel Alegre]	[Nuno Câmara Pereira]	[Ana Drago]	[Paulo Portas]

Procedure



Por favor ordene as fotos de acordo com o que a população geral faria. [Please order the faces according to how you think the general population would.]



Curso: Ano: Sexo: Idade:

Por favor indique o <u>nome</u> da pessoa da foto e se, na sua opinião, a pessoa é "Nada Conhecida" ou "Muito Conhecida" e ainda se, politicamente, é "Mais à Esquerda" ou "Mais à Direita", colocando uma cruz no quadrado respectivo.

[Course: Year: Gender: Age:

Please write the name of the person in the photo and if in your opinion, the person is "Not all known" or "Very known" and also if, politically, the person is "More Left-Wing" or "More Right-Wing" by placing a cross in the respective box.]

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

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Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

Responda por favor às seguintes questões indicando a sua resposta com uma cruz no quadrado respectivo.
[Please answer the following questions indicating your answer with a cross in the respective box.]

Qual o seu interesse pela política?
[What is your interest in politics?]

Nenhum interesse — Relativo interesse — Muito interesse

Qual a importância que atribui à política na sua vida?
[What is the importance of politics in your life?]

Nenhuma importância — Relativo interesse — Muita importância

Quando está com pessoas amigas, com que frequência discute assuntos políticos?
[When you're friends, how frequently you discuss political matters?]

Nunca — Às vezes — Frequentemente

Para cada uma das diferentes formas de acção política indique se alguma vez fez, se não fez, mas admite fazer ou se não fez e não admite fazer: [For each of the different forms of political action indicate if you ever engaged, never engaged but admit to do it, never engaged nor admit to do it:]

	Não e não admite fazer			Não, mas admite fazer			Sim
Assinar uma petição/ abaixo-assinado [Sign a petition]							
Participar numa manifestação [Participate in a demonstration]							
Fazer greve [Go on strike]							
Contactar político/governante (rua/carta/email) [Contact a politician (street/letter/email)]							
Votar nas eleições [Vote in elections]							
Filiar-se num partido político [Join a political party]							
Participar num debate político [Participate in a political debate]							
Ver/ouvir debates/entrevistas políticos [See/ hear political debates/interviews]							
Escrever uma carta para um jornal [Write a letter to a newspaper]							

Indique, se cada uma das seguintes afirmações representa mais uma política de esquerda ou de direita. Indique a sua resposta com uma cruz no quadrado respectivo [Indicate whether each of the following statements represents the political left or right. Indicate your answer with a cross in the respective box]

A liberdade e a igualdade são importantes, mas se tivesse que escolher entre as duas, escolheria a igualdade, ou seja, que as diferenças entre as classes sociais não sejam tão acentuadas.
[Freedom and equality are important, but if I had to choose between the two, I would choose equality, i.e., that the differences between social classes are not as pronounced.]

Representa posição mais à esquerda								Representa posição mais à direita

A competição é uma coisa boa, estimula as pessoas a trabalharem mais e a desenvolverem novas ideias.
[Competition is a good thing, encourages people to work harder and develop new ideas.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia controlar mais as empresas.
[The state should have more control over the companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Se as pessoas querem educação deverão trabalhar muito para a conseguir e não esperar que o Estado se encarregue disso.
[If people want education they should work hard to achieve and not expect the state to take care of it.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia ser responsável pelas pensões/reformas de todos.
[The state should be responsible for everyone's retirement / pensions.]

Representa posição mais à esquerda								Representa posição mais à direita

Os impostos deveriam ser reduzidos ao mínimo, quer para os cidadãos quer para as empresas privadas.
[Taxes should be reduced to a minimum both for citizens and private companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Em política as pessoas falam de esquerda e direita. Como se situaria, quanto às suas posições políticas, nesta escala: [In politics people talk of left and right. How do you stand regarding your political positions on this scale:]

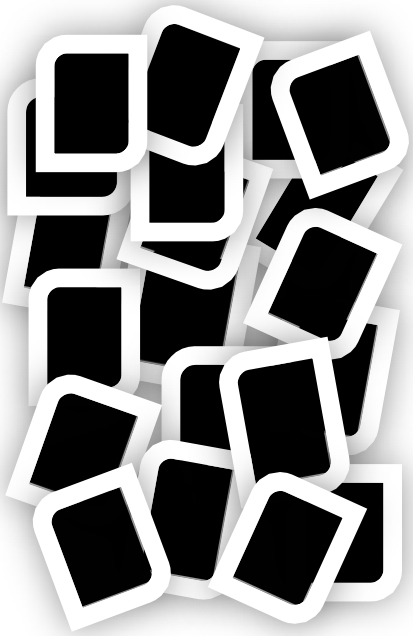
Mais à esquerda								Mais à direita

Experiment 2

Stimulus materials

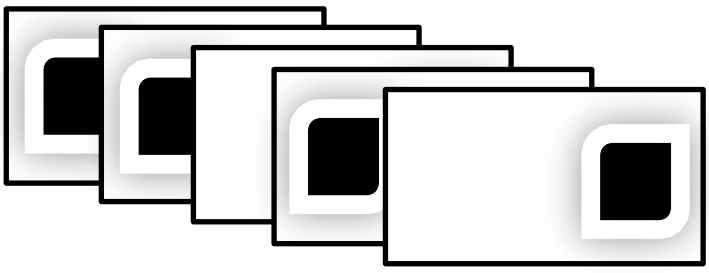
12 targets	
Socialist politicians	*Conservative politicians*
[Manuel Alegre]	[Mota Amaral]
[Jerónimo de Sousa]	[Marques Mendes]
[Miguel Portas]	[Nuno da Câmara Pereira]
[Francisco Louçã]	[Paulo Portas]
[Ana Drago]	[Manuela Ferreira Leite]
[Bernardino Soares]	[Santana Lopes]

20 fillers



Procedure

Neste estudo de percepção e memória visual de faces vamos apresentar-lhe um conjunto de fotos de pessoas conhecidas. Como sabe as pessoas apresentam desempenhos diferentes no que diz respeito a estas capacidades. Nos ecrãs seguintes serão apresentadas fotos de pessoas conhecidas. Aquilo que lhe pedimos é que olhe atentamente para essas fotos. No final iremos colocar-lhe algumas perguntas.
[This study is about visual perception and memory. As you know people have different performances with respect to these capabilities. In the following screens you will be presented with photographs of familiar people. What we will ask you to do is to look carefully at these pictures. In the end we will ask you a few questions.]



(3000 ms)

Acabou de completar a primeira fase do estudo. Abra o caderno de resposta que se encontra à sua frente. Por favor coloque um X no quadrado correspondente ao sítio onde acha que a foto apareceu mais vezes.
[You have completed the first part of the study. Please open the answer sheets and place an (X) in the box where you think the photo appeared more often.]

Curso: Ano: Sexo: Idade:

Por favor indique o <u>nome</u> da pessoa da foto e se, na sua opinião, a pessoa é "Nada Conhecida" ou "Muito Conhecida" e ainda se, politicamente, é "Mais à Esquerda" ou "Mais à Direita", colocando uma cruz no quadrado respectivo.

[Course: Year: Gender: Age:

Please write the name of the person in the photo and if in your opinion, the person is "Not all known" or "Very known" and also if, politically, the person is "More Left-Wing" or "More Right-Wing" by placing a cross in the respective box.]

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

Responda por favor às seguintes questões indicando a sua resposta com uma cruz no quadrado respectivo.
[Please answer the following questions indicating your answer with a cross in the respective box.]

Qual o seu interesse pela política?
[What is your interest in politics?]

Nenhum interesse — Relativo interesse — Muito interesse

Qual a importância que atribui à política na sua vida?
[What is the importance of politics in your life?]

Nenhuma importância — Relativo interesse — Muita importância

Quando está com pessoas amigas, com que frequência discute assuntos políticos?
[When you're friends, how frequently you discuss political matters?]

Nunca — Às vezes — Frequentemente

Para cada uma das diferentes formas de acção política indique se alguma vez fez, se não fez, mas admite fazer ou se não fez e não admite fazer: [For each of the different forms of political action indicate if you ever engaged, never engaged but admit to do it, never engaged nor admit to do it:]

	Não e não admite fazer			Não, mas admite fazer			Sim
Assinar uma petição/ abaixo-assinado [Sign a petition]							
Participar numa manifestação [Participate in a demonstration]							
Fazer greve [Go on strike]							
Contactar político/governante (rua/carta/email) [Contact a politician (street/letter/email)]							
Votar nas eleições [Vote in elections]							
Filiar-se num partido político [Join a political party]							
Participar num debate político [Participate in a political debate]							
Ver/ouvir debates/entrevistas políticos [See/ hear political debates/interviews]							
Escrever uma carta para um jornal [Write a letter to a newspaper]							

Indique, se cada uma das seguintes afirmações representa mais uma política de esquerda ou de direita. Indique a sua resposta com uma cruz no quadrado respectivo [Indicate whether each of the following statements represents the political left or right. Indicate your answer with a cross in the respective box]

A liberdade e a igualdade são importantes, mas se tivesse que escolher entre as duas, escolheria a igualdade, ou seja, que as diferenças entre as classes sociais não sejam tão acentuadas.
[Freedom and equality are important, but if I had to choose between the two, I would choose equality, i.e., that the differences between social classes are not as pronounced.]

Representa posição mais à esquerda								Representa posição mais à direita

A competição é uma coisa boa, estimula as pessoas a trabalharem mais e a desenvolverem novas ideias.
[Competition is a good thing, encourages people to work harder and develop new ideas.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia controlar mais as empresas.
[The state should have more control over the companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Se as pessoas querem educação deverão trabalhar muito para a conseguir e não esperar que o Estado se encarregue disso.
[If people want education they should work hard to achieve and not expect the state to take care of it.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia ser responsável pelas pensões/reformas de todos.
[The state should be responsible for everyone's retirement / pensions.]

Representa posição mais à esquerda								Representa posição mais à direita

Os impostos deveriam ser reduzidos ao mínimo, quer para os cidadãos quer para as empresas privadas.
[Taxes should be reduced to a minimum both for citizens and private companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Em política as pessoas falam de esquerda e direita. Como se situaria, quanto às suas posições políticas, nesta escala: [In politics people talk of left and right. How do you stand regarding your political positions on this scale:]

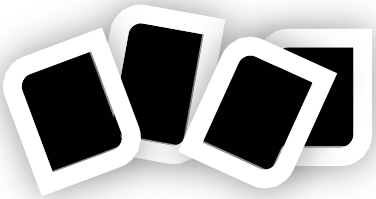
Mais à esquerda								Mais à direita

Experiment 3

Stimulus materials

8 targets	
Socialist politicians	*Conservative politicians*
[Francisco Louçã]	[Santana Lopes]
[Jerónimo de Sousa]	[Manuela Ferreira Leite]
[Ana Drago]	[Paulo Portas]
[Miguel Portas]	[Marques Mendes]

4 fillers



Procedure

Vamos de seguida apresentar um conjunto de fotos de políticos. A sua tarefa será classificar o mais rápido e correctamente possível as fotos usando as teclas "U" se achar que se trata de um político socialista ou "N" se achar que se trata de um político conservador (contrabalançado).

[We are going to show you a set of politicians photos. Your task is to classify as fast and accurately as possible the following pictures by pressing "U" if you think it is a socialist politician or pressing "N" if you it think is a conservative politician. *(counterbalanced)*]

Curso: Ano: Sexo: Idade:

Por favor indique o <u>nome</u> da pessoa da foto e se, na sua opinião, a pessoa é "Nada Conhecida" ou "Muito Conhecida" e ainda se, politicamente, é "Mais à Esquerda" ou "Mais à Direita", colocando uma cruz no quadrado respectivo.

[Course: Year: Gender: Age:

Please write the name of the person in the photo and if in your opinion, the person is "Not all known" or "Very known" and also if, politically, the person is "More Left-Wing" or "More Right-Wing" by placing a cross in the respective box.]

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

NOME:								
Nada conhecido								Muito conhecido
Mais à esquerda								Mais à direita

Responda por favor às seguintes questões indicando a sua resposta com uma cruz no quadrado respectivo.
[Please answer the following questions indicating your answer with a cross in the respective box.]

Qual o seu interesse pela política?
[What is your interest in politics?]

Nenhum interesse — Relativo interesse — Muito interesse

Qual a importância que atribui à política na sua vida?
[What is the importance of politics in your life?]

Nenhuma importância — Relativo interesse — Muita importância

Quando está com pessoas amigas, com que frequência discute assuntos políticos?
[When you're friends, how frequently you discuss political matters?]

Nunca — Às vezes — Frequentemente

Para cada uma das diferentes formas de acção política indique se alguma vez fez, se não fez, mas admite fazer ou se não fez e não admite fazer: [For each of the different forms of political action indicate if you ever engaged, never engaged but admit to do it, never engaged nor admit to do it:]

	Não e não admite fazer			Não, mas admite fazer			Sim
Assinar uma petição/ abaixo-assinado [Sign a petition]							
Participar numa manifestação [Participate in a demonstration]							
Fazer greve [Go on strike]							
Contactar político/governante (rua/carta/email) [Contact a politician (street/letter/email)]							
Votar nas eleições [Vote in elections]							
Filiar-se num partido político [Join a political party]							
Participar num debate político [Participate in a political debate]							
Ver/ouvir debates/entrevistas políticos [See/ hear political debates/interviews]							
Escrever uma carta para um jornal [Write a letter to a newspaper]							

Indique, se cada uma das seguintes afirmações representa mais uma política de esquerda ou de direita. Indique a sua resposta com uma cruz no quadrado respectivo [Indicate whether each of the following statements represents the political left or right. Indicate your answer with a cross in the respective box]

A liberdade e a igualdade são importantes, mas se tivesse que escolher entre as duas, escolheria a igualdade, ou seja, que as diferenças entre as classes sociais não sejam tão acentuadas.
[Freedom and equality are important, but if I had to choose between the two, I would choose equality, i.e., that the differences between social classes are not as pronounced.]

Representa posição mais à esquerda								Representa posição mais à direita

A competição é uma coisa boa, estimula as pessoas a trabalharem mais e a desenvolverem novas ideias.
[Competition is a good thing, encourages people to work harder and develop new ideas.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia controlar mais as empresas.
[The state should have more control over the companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Se as pessoas querem educação deverão trabalhar muito para a conseguir e não esperar que o Estado se encarregue disso.
[If people want education they should work hard to achieve and not expect the state to take care of it.]

Representa posição mais à esquerda								Representa posição mais à direita

O Estado devia ser responsável pelas pensões/reformas de todos.
[The state should be responsible for everyone's retirement / pensions.]

Representa posição mais à esquerda								Representa posição mais à direita

Os impostos deveriam ser reduzidos ao mínimo, quer para os cidadãos quer para as empresas privadas.
[Taxes should be reduced to a minimum both for citizens and private companies.]

Representa posição mais à esquerda								Representa posição mais à direita

Em política as pessoas falam de esquerda e direita. Como se situaria, quanto às suas posições políticas, nesta escala: [In politics people talk of left and right. How do you stand regarding your political positions on this scale:]

Mais à esquerda								Mais à direita

APPENDIX B (PILOT STUDY AND EXP. 1 & 2 – CHAP. 3)

Pilot study of the stimuli (words)

***"O Espaço da política"*:** Avaliação da conotação política e da valência de uma lista de palavras[18]

Margarida Vaz Garrido, Ana Rita Farias, & Tomás Palma

ISCTE - Instituto Universitário de Lisboa/Centro de Investigação e Intervenção Social

Resumo

Neste artigo, apresentamos um pré-teste de um conjunto de 123 palavras relacionadas com política. Cada palavra foi avaliada por 54 indivíduos no que diz respeito à sua conotação política (esquerda ou direita) e ainda no que diz respeito à sua valência (negativa ou positiva). Os resultados permitiram identificar 47 palavras de esquerda e 29 de direita avaliadas significativamente abaixo e acima do ponto médio da escala, respectivamente, como também 47 palavras relacionadas com política mas avaliadas como neutras (no ponto médio da escala) na dimensão esquerda - direita. Análises posteriores permitem ainda identificar uma lista de 17 palavras de esquerda e de 7 palavras de direita avaliadas de igual modo por respondentes de diferentes orientações políticas. Finalmente a valência destas palavras foi também analisada separadamente para respondentes de esquerda e de direita. A lista de estímulos obtida constitui uma base de trabalho para potenciais estudos quer no campo mais emergente da cognição situada, quer nos domínios já consolidados da psicologia social e da psicologia política.

Palavras-chave: Orientação política, Esquerda, Direita, Valência

[18] This pilot study was already published: Garrido, M. V., Farias, A. R., & Palma, T. A. (2010). O espaço da política: Avaliação da conotação política e da valência de uma lista de palavras. *Laboratório de Psicologia, 8,* 81-99.

"The space of politics": Evaluation of the political connotation and valence of words.

Abstract

In this paper we present a pre-test of a set of 123 politically-related words. Each word was rated by 54 participants regarding its political connotation (left-wing, right-wing) and regarding its valence (negative or positive). Results allowed us to identify 47 left-wing words and 29 right-wing words that were significantly rated below or above de middle point of the scale, as well as 47 politically-related words that were rated as neutral regarding the left-right wing dimension (in the midpoint of the scale). Subsequent analysis identified a subset of 17 left-wing words and 7 right-wing words with overlapping ratings regardless respondents' political orientation. Finally, stimulus valence was separately analyzed as a function of participants' political orientation. The obtained stimulus list can be used in future studies in the emerging field of situated cognition as well as in social and political psychology domains.

Key-words: Political orientation, Left-wing, Right-wing, Valence

A referência política aos termos *esquerda* e *direita* tem a sua origem na forma de assento parlamentar, que directamente indicava a orientação política representada na Assembleia Nacional Francesa de 1789. Na perspectiva visual do presidente da Assembleia os partidos de esquerda, sentados à esquerda, eram os que, geralmente, apoiavam as mudanças radicais da revolução, que incluíam a criação da república e a secularização. Os partidos de direita, sentados à direita, apoiavam a manutenção das instituições do antigo regime (a monarquia, a aristocracia e a igreja).

Ao longo dos anos, a esquerda política ficou também associada a um conjunto de movimentos revolucionários na Europa, especialmente o socialismo, o anarquismo e o comunismo, mas também à social democracia e ao liberalismo social. Actualmente, ser de esquerda implica geralmente preocupações centradas nos direitos dos trabalhadores, na oposição ao capitalismo, e no apoio à mudança social com o objectivo de promover a igualdade social.

Por outro lado, ser de direita implica geralmente o apoio à preservação da ordem social mais tradicional o que muitas vezes inclui a estratificação social e a pertença a grupos políticos com uma ligação histórica à direita tradicional o que inclui conservadores, reaccionários, monarcas aristocratas e teocratas, e ainda todos os que defendem o capitalismo, o mercado livre e ainda algumas formas de nacionalismo.

Se, efectivamente, as pessoas tendem, a associar determinados conceitos à noção de *esquerda* e *direita* partidária serão, então, várias as áreas de estudo que podem beneficiar da existência de material estímulo, devidamente pré tEstado, que permita identificar que conceitos se associam a cada uma das orientações políticas mencionadas.

No entanto, a associação de determinados conceitos à noção de *esquerda* e *direita* partidária poderá não ser homogénea numa população com orientações políticas diferenciadas, nomeadamente porque muitos destes conceitos possuem valências muitos distintas.

Importa, por isso, esclarecer a origem e o significado doutrinal da dicotomia política *esquerda / direita* e recordar que se trata de uma dicotomia simbolicamente marcada. Efectivamente, e de uma maneira geral, em idiomas e culturas diferentes, esquerda associa-se frequentemente a algo negativo e direita a algo positivo. As línguas europeias reflectem o simbolismo positivo da direita e a carga negativa da esquerda. Em idiomas anglófonos, por exemplo, expressões como "*the right answer*" (a resposta certa) ou "*the right person for the job*" (a pessoa certa para a função) constituem exemplos da associação de aspectos positivos com o lado direito. Em contraste, expressões como "*two left feet"* (dois pés esquerdos) associam-se a aspectos negativos. A direita é "*right*" (certa), o que leva a pensar que a "*left*", a esquerda, é "*wrong*" (errada). Em francês, a esquerda é também "*gauche*" (desastrada) enquanto a direita é "*droite*" (íntegra). Em italiano, a esquerda é "*sinistra*" e só a direita é "*destra*" (Rosas, 2013).

A valência associada aos conceitos de *esquerda* e *direita* pode também encontrar-se em convenções não linguísticas de algumas culturas. Por exemplo, os oradores Romanos eram aconselhados a nunca gesticular com a mão esquerda, os actores Ingleses da renascença avisados que gestos executados com a mão esquerda eram vulgares e perigosos (Casasanto & Jasmin, 2009). Frequentemente, a mão direita

tem reservadas para si as tarefas nobres, enquanto a esquerda se ocupa dos trabalhos impuros. De acordo com a doutrina islâmica, a mão esquerda deve apenas ser usada para trabalhos menores como a auto limpeza enquanto que a mão direita é usada para comer. Paralelamente, o pé esquerdo é utilizado para entrar na casa de banho ao passo que o direito deve ser usado para entrar na mesquita. Na religião católica, o apóstolo preferido senta-se à direita do Senhor, tal como o Filho está sentado à direita do Pai (Rosas, 2013).

São várias as explicações para a valência distinta associada aos conceitos de esquerda e direita, nomeadamente as que destacam uma especialização hemisférica inata (Maxwell & Davidson, 2007), que uma vez estabelecida seria reforçada pela linguagem e pela cultura, ou as que destacam o facto da mão dominante ser sobretudo a direita o que aumentaria a fluência perceptivo-motora do corpo com o lado direito e, consequentemente, levaria a uma avaliação mais positiva deste lado (Corballis & Beale, 1976).

Para além da identificação dos conceitos associados à esquerda e direita partidárias e à determinação da sua valência, é ainda importante verificar a consistência avaliativa quer na dimensão política quer no que diz respeito à valência entre pessoas com orientações políticas diferentes. Neste sentido, parece plausível sugerir que, conceitos associados a política (e.g., ditadura) que tenham valência negativa poderão ser atribuídos à esquerda ou à direita partidária de acordo com as preferências político-partidárias de quem os avalia. O mesmo poderá acontecer para conceitos positivos (e.g., liberdade).

Uma vez que a literatura é escassa no que diz respeito a este tipo de estímulos, nomeadamente na população portuguesa, o presente trabalho tem assim como objectivo, a identificação e validação de um conjunto de estímulos, nomeadamente linguísticos, que representem conceitos, objectos ou pessoas ligadas aos conceitos de *esquerda* e *direita* política e ainda a avaliação da valência percebida (positiva/negativa).

É nosso entender que uma leitura integrada da avaliação de conotação política e valência percebida dos conceitos estímulo, em função da orientação política dos participantes, poderá ser ainda mais informativa, para todos aqueles que, em diferentes domínios específicos, venham a utilizar o material aqui pré-tEstado.

Consideramos que este tipo de material estímulo possa vir a ser útil para estudos futuros em diferentes áreas, nomeadamente as que exploram a ancoragem espacial de conceitos (e.g., Barsalou, 1999; Lakoff & Johnson, 1999), como a área da cognição situada, ou em áreas mais consolidadas da psicologia social e da psicologia política.

Método

Participantes

Participaram neste estudo, dois grupos de participantes. O primeiro grupo (N = 65), foi composto por estudantes do ISCTE - Instituto Universitário de Lisboa. O segundo grupo integrou 54 estudantes (42 mulheres, idade *M*=24,22; *DP*=6,70) do ISCTE - Instituto Universitário de Lisboa e do Instituto Superior de Psicologia Aplicada.

Material e Medidas

Uma primeira lista foi gerada por um grupo de estudantes universitários (N = 65) a quem foi pedido que escrevessem 10 palavras que em sua opinião remetessem para conceitos políticos de "*esquerda*", 10 palavras para conceitos políticos de "*direita*" e 10 palavras associadas com política mas não relacionadas com orientações de esquerda ou de direita. Esta tarefa foi realizada sem tempo limite e durou cerca de 15 minutos. Não foram necessárias instruções ou esclarecimentos adicionais. A esta lista foram acrescentadas algumas palavras retiradas da imprensa escrita para que a lista de conceitos a avaliar numa fase posterior fosse o mais completa possível. Após eliminados sinónimos e palavras redundantes obteve-se uma lista estímulo com 123 palavras. A partir destas 123 palavras foi construído um questionário constituído por duas escalas independentes de sete pontos. Na escala de avaliação política, 1 representa, o ponto mais à esquerda e 7 o ponto mais à direita. Na escala de valência 1 representa o ponto mais negativo e 7 o ponto mais positivo.

O pré-teste continha ainda algumas questões (adaptadas do inquérito European Values Survey de 2000; ver Ramos, 2003) que permitiram controlar o interesse pela

política, o envolvimento político e o conhecimento político dos participantes. A inclusão destas questões surge como uma tentativa de identificar a existência e a influência de outros factores (além da orientação política dos respondentes) que possam interferir na avaliação da conotação política e da valência das palavras pré testadas.

No que diz respeito ao interesse pela política foi perguntado aos participantes "Qual o seu interesse pela política?", "Qual a importância que atribui à política na sua vida?" e também "Quando está com pessoas amigas, com que frequência discute assuntos políticos?". Esta avaliação foi feita através de escalas de sete pontos em que o ponto 1 corresponde a menor interesse, importância, e frequência e 7 a maior interesse, importância, e frequência.

Para avaliar o envolvimento político, foi solicitado aos participantes que indicassem, numa escala de sete pontos, em que medida "fez" (1), "não fez mas admite fazer" (4), ou "não fez e não admite fazer" (7) um conjunto de diferentes formas de acção política: "assinar uma petição ou um abaixo-assinado", "participar numa manifestação", "fazer greve", "votar nas eleições", "filiar-se num partido político", "participar num debate político", "ver/ouvir debates/entrevistas políticos" e "escrever uma carta para um jornal".

Para averiguar o conhecimento político dos participantes, pediu-se também para avaliaram se um conjunto de afirmações representavam políticas de esquerda ou de direita. As afirmações apresentadas foram: "O Estado devia controlar mais as empresas", "A competição é uma coisa boa, estimula as pessoas a trabalharem mais e a desenvolverem novas ideias", "O Estado devia controlar mais as empresas", "Se as pessoas querem educação deverão trabalhar muito para a conseguir e não esperar que o Estado se encarregue disso", "O Estado devia ser responsável pelas pensões/reformas de todos" e "Os impostos deveriam ser reduzidos ao mínimo, quer para os cidadãos quer para as empresas privadas". Estas questões foram respondidas em escalas de sete pontos onde 1 correspondia a uma posição "mais à esquerda" e 7 a uma posição "mais à direita".

Finalmente foi solicitada a orientação política dos participantes. Esta última avaliação foi igualmente medida numa escala de sete pontos, em que o ponto 1

representa uma orientação política mais à esquerda, e o ponto 7 representa uma orientação política mais à direita.

Procedimento

Foi pedido a um segundo grupo de participantes (N=54) que colaborassem num pré-teste sobre percepção política respondendo a um questionário. No mesmo era pedido que os participantes avaliassem uma lista de palavras: "Por favor indique em que medida as seguintes palavras evocam os conceitos políticos de "esquerda" (E) ou de "direita" (D) e ainda se, em sua opinião as palavras apresentadas são mais "negativas" (-) ou "positivas" (+). Pediu-se também aos participantes que respondessem a algumas questões que permitiram controlar a importância que dão à política, o seu envolvimento político e o seu conhecimento político, assim como a sua orientação política.

Resultados

Em primeiro lugar, e para cada palavra foi calculada a média, desvio-padrão e intervalo de confiança a 95%. A lógica de apresentação dos resultados representa o tipo de análise que pretendemos efectuar. Assim apresentamos, primeiramente, os resultados gerais das avaliações de todos os participantes, independentemente da sua orientação política. O interesse, envolvimento e conhecimento político não produziram diferenças nas avaliações efectuadas tanto no que se refere à categorização dos conceitos em termos da sua conotação política quer relativamente à sua valência percebida[19].

A partir do Quadro 1 (colunas da esquerda) podemos constatar que a amostra total identifica 47 palavras como sendo claramente de esquerda, 29 palavras como sendo claramente de direita e 47 palavras como sendo politicamente neutras. No que diz respeito à valência (Quadro 1, colunas da direita), 53 palavras apresentadas são

[19] Esta análise foi realizada combinando estas questões numa única escala que revelou uma consistência interna adequada (α=0.78). Uma divisão dos participantes pela mediana em dois grupos (que denominámos politicamente desinteressados e politicamente interessados) permitiu uma análise separada para cada um dos grupos da avaliação da conotação política das palavras e da sua valência. A comparação das avaliações produzidas pelos dois grupos no que diz respeito à média, desvio padrão e intervalo de confiança, quer para conotação política quer para valência mostrou, globalmente, um padrão equivalente.

avaliadas como tendo uma conotação positiva, 36 das palavras apresentadas são avaliadas como tendo uma conotação negativa e 34 são avaliadas como neutras em termos de valência.

Para facilitar a leitura destes dois quadros assinalamos com um "e" ou um "d" as palavras avaliadas, significativamente, como sendo politicamente conotadas à esquerda ou à direita e com um "+" e um "-" as consideradas claramente positivas e negativas, respectivamente. Esta identificação foi feita com base na informação dos intervalos de confiança. As palavras cujo limite superior do intervalo de confiança se situa abaixo do ponto médio da escala (4) foram identificadas como sendo de esquerda, as palavras cujo limite inferior do intervalo de confiança se situa acima do ponto médio da escala foram identificadas como sendo de direita. Um procedimento semelhante foi utilizado para identificar palavras de valência negativa e positiva.

Posteriormente a amostra foi dividida segundo a sua orientação política. Os participantes que se auto-classificaram na escala de orientação política entre o ponto 1 e 3 foram considerados de esquerda (N=24) e os que se auto-classificaram entre o ponto 5 e 7 (N=12) foram considerados como tendo uma orientação política de direita. Para cada uma destas sub-amostras são também apresentadas médias, desvios-padrão e intervalos de confiança a 95% das avaliações das palavras estímulo em termos de conotação política e de valência.

Note-se que esta divisão de acordo com a orientação política se reveste de especial importância, nomeadamente porque algumas das palavras recebem avaliações divergentes por parte de participantes com orientações políticas opostas. Por exemplo, palavras como "abertura", "autonomia", "civismo", "cooperação", "honestidade", etc., tendem a ser classificadas por participantes com orientação política de esquerda como sendo palavras de esquerda mas esta avaliação não é partilhada pelos participantes com a orientação política oposta. Do mesmo modo, palavras como "competência", "concorrência", "Europa", "gestão", etc., são classificadas à direita por participantes com orientação política de direita embora os de esquerda nem sempre partilhem da mesma opinião. Por outro lado, palavras como "autoritarismo", "opressão", "censura", "conservadorismo", etc., e cuja valência é negativa tendem a ser atribuídas pelos participantes de esquerda à direita política. Do mesmo modo participantes de direita atribuem à esquerda as palavras de valência negativa "leninismo", "trotskismo", que os participantes de esquerda, curiosamente, não reconhecem como sendo de esquerda.

Assim e para os participantes com uma orientação política de esquerda foram identificadas 44 palavras de esquerda, 28 de direita e 51 neutras (Quadro 2, colunas da esquerda). No que diz respeito à valência os participantes de esquerda identificam 45 palavras como positivas, 35 como negativas e 43 neutras (Quadro 2, colunas da direita).

O Quadro 3 (colunas da esquerda) mostra que os participantes com uma orientação política de direita identificam 23 palavras como sendo de esquerda, 13de direita e 87 neutras. Finalmente, e ainda no Quadro 3 (colunas da direita) é possível verificar que os participantes de direita identificam 34 palavras como positivas, 32 como negativas e 57 neutras.

Finalmente e a partir da leitura combinada dos Quadros 2 e 3 (assinalado com um *) é possível identificar 17 palavras de esquerda e 7 de direita avaliadas de igual modo relativamente à sua conotação política por respondentes com orientações políticas opostas.

Conclusão

O presente pré-teste permitiu, a partir de uma lista de 123 palavras, identificar palavras que foram significativamente avaliadas como tendo uma conotação política de esquerda, de direita, ou como politicamente neutras. Este pré-teste, permitiu, igualmente, averiguar a valência dessas mesmas palavras, identificando se essas palavras são percebidas como mais positivas, mais negativas ou neutras. A análise efectuada permitiu, também, a leitura separada de subgrupos amostrais (participantes com uma orientação política de esquerda e participantes com uma orientação política de direita) verificando-se a existência de palavras que são avaliadas de modo diferente tanto relativamente à sua conotação política como quanto à valência que lhes é associada, e ainda outras com avaliações equivalentes nestas duas dimesnões, por parte de participantes com orientações políticas opostas.

Parece-nos, no entanto, importante salientar algumas limitações do presente trabalho, que deverão ser tidas em conta por todos aqueles que tencionarem utilizar os materiais estimulo aqui pré-tEstados. Uma desta limitações reside no facto de o valor 1 representar o valor extremo da esquerda e, simultaneamente, o valor mais negativo, na escala de valência. Ainda que o questionário apresente duas escalas devidamente

separadas, especificando, em cada uma delas, o que se está exactamente a medir, (ver questionário no final), é possível conceber que em, termos simbólicos, a ligação esquerda / negativo e direita / positivo possa afectar as respostas dos participantes. Em estudos futuros poder-se-á alternar os polos das escalas ao longo do questionário ou inverter a escala para metade dos participantes, com atenção aos constrangimentos que estes procedimentos possam também trazer. No entanto, é de referir que, no presente estudo, os resultados parecem apontar para a independência entre as respostas de conotação política e avaliativas.

Atendendo à diversidade de estudos que podem ser realizados com as palavras aqui testadas, consideramos, ainda, importante que na sua utilização futura, as palavras sejam seleccionadas não apenas com base na sua conotação política e valência mas que também se atenda à sua avaliação diferencial por participantes de orientações políticas distintas.

Finalmente, e numa futura utilização destas palavras como material estímulo, deverá ser dada alguma atenção ao contexto político actual onde, com alguma facilidade, determinadas palavras podem adquirir particular relevância ou significados muito específicos. Salienta-se ainda que estes conceitos foram gerados e pré-tEstados recorrendo a uma amostra de estudantes universitários, sendo possível que algumas das avaliações obtidas, quer de conotação política, quer de valência possam ser distintas para uma população com uma cultura política mais madura.

Não obstante algumas limitações, a elaboração do tipo de normas aqui apresentadas, poderá facilitar o desenho e operacionalização de estudos futuros, quer no campo mais emergente da cognição situada, quer na nos domínios já consolidados da psicologia social e da psicologia política.

Quadro 1: Classificação das palavras em função da sua conotação política "esquerda / direita" e valência percebida

Conotação Política						Valência					
Palavras	**N**	**M**	**DP**	**Int. Conf. 95%**		**Palavras**	**N**	**M**	**DP**	**Int. Conf. 95%**	
				LI	**LS**					**LI**	**LS**
Comunismo* (e) (-)	52	1,90	1,43	1,51	2,30	Pide (d) (-)	43	1,37	1,13	1,02	1,72
Avante* (e) (+)	52	2,00	1,48	1,59	2,41	Nazismo (d) (-)	44	1,43	1,00	1,13	1,74
Camaradas* (e) (+)	53	2,13	1,59	1,69	2,57	Ditadura (d) (-)	43	1,47	0,91	1,19	1,74
Cravo* (e) (+)	52	2,17	1,57	1,74	2,61	Opressão (d) (-)	43	1,63	1,13	1,28	1,98
Guevara* (e)	51	2,24	1,39	1,84	2,63	Pobreza (-)	43	1,70	1,32	1,29	2,10
Abril * (e) (+)	50	2,38	1,48	1,96	2,80	Censura (d) (-)	42	1,74	1,34	1,32	2,16
Foice* (e) (-)	52	2,48	1,60	2,03	2,93	Intolerância (d) (-)	43	1,77	1,19	1,40	2,13
Revolução* (e) (+)	52	2,50	1,38	2,12	2,88	Anarquismo (e) (-)	42	1,95	1,29	1,55	2,35
Sindicato* (e) (+)	52	2,67	1,40	2,28	3,06	Défice (d) (-)	41	2,05	1,34	1,63	2,47
Martelo* (e)	50	2,68	1,54	2,24	3,12	Autoritarismo (d) (-)	41	2,17	1,87	1,58	2,76
Proletariado* (e)	51	2,69	1,29	2,32	3,05	Bush (d) (-)	40	2,20	1,54	1,71	2,69
Manifestação* (e) (+)	52	2,73	1,12	2,42	3,04	Estalinismo (e) (-)	42	2,31	1,65	1,80	2,82
Greve* (e)	52	2,77	1,52	2,35	3,19	Anulação (-)	40	2,33	1,54	1,83	2,82
Marxismo* (e) (-)	52	2,79	1,74	2,30	3,27	Conservadorismo (d) (-)	41	2,44	1,60	1,93	2,94
Luta* (e) (+)	51	2,80	1,17	2,48	3,13	Fidel (e) (-)	43	2,44	1,59	1,95	2,93
Abertura (e) (+)	51	2,84	1,63	2,38	3,30	Supérfluo (-)	43	2,44	1,39	2,02	2,87
Colectivismo (e) (+)	51	2,86	1,47	2,45	3,28	Elite (d) (-)	41	2,46	1,48	1,99	2,93
Leninismo (e) (-)	50	2,86	1,94	2,31	3,41	Colonialismo* (d) (-)	43	2,53	1,72	2,00	3,07
Vermelho* (e) (+)	52	2,87	1,76	2,38	3,36	Rigidez (d) (-)	44	2,57	1,50	2,11	3,02
Povo* (e) (+)	52	2,94	1,36	2,56	3,32	Individualismo (-)	43	2,60	1,50	2,14	3,07
Fidel (e) (-)	52	3,02	2,05	2,45	3,59	Impostos (-)	43	2,63	1,56	2,15	3,11
Protesto (e) (+)	52	3,02	1,35	2,64	3,40	Cepticismo (-)	42	2,69	1,44	2,24	3,14
Estalinismo (e) (-)	51	3,06	2,28	2,42	3,70	Controlo (d) (-)	43	2,72	1,49	2,26	3,18
Feminismo (e) (+)	52	3,06	1,45	2,65	3,46	Consumismo* (d) (-)	42	2,76	1,28	2,36	3,16
Cooperação (e) (+)	53	3,13	1,65	2,68	3,59	Leninismo (e) (-)	44	2,93	1,74	2,40	3,46
Autonomia (e) (+)	53	3,15	1,68	2,69	3,61	Trotskismo (e) (-)	39	2,97	1,35	2,54	3,41
Trotskismo (e) (-)	51	3,22	1,75	2,72	3,71	Capitalismo* (d) (-)	42	3,05	1,48	2,59	3,51
Massas (e)	52	3,23	1,35	2,85	3,61	Promessas (d) (-)	43	3,07	1,47	2,62	3,52
Anarquismo (e) (-)	51	3,24	1,96	2,69	3,79	Utopia (-)	43	3,23	1,63	2,73	3,73
Cuba (e) (-)	52	3,27	2,26	2,64	3,90	Hierarquia (d) (-)	42	3,33	1,43	2,89	3,78
Liberdade (e) (+)	51	3,27	1,51	2,85	3,70	Cuba (e) (-)	43	3,35	2,01	2,73	3,97
Estrela (e)	51	3,33	1,40	2,94	3,73	Marxismo* (e) (-)	43	3,35	1,63	2,85	3,85
Solidariedade (e) (+)	51	3,33	1,45	2,93	3,74	Formalidade (d) (-)	42	3,40	1,21	3,03	3,78
União (e) (+)	52	3,33	1,50	2,91	3,75	Comunismo* (e) (-)	43	3,42	1,85	2,85	3,99
Direitos (e) (+)	52	3,35	1,38	2,96	3,73	Foice* (e) (-)	43	3,49	1,61	2,99	3,98
Comunidade (e) (+)	53	3,36	1,39	2,98	3,74	Laranja* (d)	41	3,56	1,57	3,07	4,06
Partilha (e) (+)	53	3,38	1,60	2,94	3,82	Privado* (d) (-)	42	3,57	1,21	3,19	3,95
Corporativismo (e) (+)	52	3,42	1,73	2,94	3,90	Martelo* (e)	43	3,65	1,49	3,19	4,11
Honestidade (e) (+)	53	3,45	1,46	3,05	3,86	Economicismo (d)	42	3,69	1,32	3,28	4,10
Fábrica (e)	53	3,49	1,73	3,01	3,97	Patronato	43	3,70	1,41	3,26	4,13
Rosa (e)	51	3,49	1,75	3,00	3,98	Minorias	40	3,73	1,74	3,17	4,28
Social (e) (+)	52	3,50	1,24	3,15	3,85	Interesses	43	3,81	1,53	3,34	4,29
Cidadãos (e) (+)	53	3,57	1,34	3,20	3,93	Riqueza (d)	42	3,83	1,62	3,33	4,34
Civismo (e) (+)	52	3,58	1,23	3,24	3,92	Classe	42	3,86	1,62	3,35	4,36
Utopia (-)	52	3,58	1,71	3,10	4,05	Governo	43	3,86	1,46	3,41	4,31
Humildade (e) (+)	51	3,59	1,25	3,24	3,94	Estrela (e)	42	3,88	1,42	3,44	4,32
Descentralização (e) (+)	53	3,60	1,43	3,21	4,00	Ministro	43	3,93	1,45	3,48	4,38

Idealismo (+)	51	3,69	1,35	3,31	4,07
Moção (e)	52	3,69	1,06	3,40	3,99
Lealdade (+)	52	3,71	1,26	3,36	4,06
Público (+)	52	3,71	1,29	3,35	4,07
Vereador	51	3,73	1,22	3,38	4,07
Flexibilidade (+)	53	3,74	1,55	3,31	4,16
Popular	51	3,76	1,70	3,29	4,24
Urna	51	3,76	1,24	3,42	4,11
Justiça (+)	52	3,77	1,32	3,40	4,14
Liberalismo (+)	51	3,78	1,76	3,29	4,28
Voto (+)	51	3,78	1,32	3,41	4,15
Eficácia (+)	53	3,83	1,25	3,49	4,18
Minorias	53	3,83	1,60	3,39	4,27
Campanha	53	3,85	1,38	3,47	4,23
Classe	52	3,85	1,47	3,44	4,26
Meritocracia	50	3,86	1,11	3,55	4,17
Sondagem	50	3,86	1,07	3,56	4,16
Empenho (+)	53	3,89	1,09	3,59	4,19
Governo	51	3,90	1,42	3,50	4,30
Competência (+)	53	3,91	1,38	3,53	4,29
Discurso	52	3,92	1,23	3,58	4,27
Constituição (+)	52	4,00	1,24	3,66	4,34
Ordem (+)	51	4,00	1,40	3,61	4,39
Regulamentos (+)	51	4,00	0,85	3,76	4,24
Empreendedorismo (+)	53	4,04	1,40	3,65	4,42
Europa (+)	52	4,04	1,14	3,72	4,35
Leis (+)	51	4,04	1,13	3,72	4,36
Patronato	52	4,04	1,60	3,59	4,48
Democracia (+)	53	4,06	1,56	3,63	4,49
Estado	53	4,06	1,56	3,63	4,49
Anulação (-)	51	4,10	1,80	3,59	4,61
Normas (+)	51	4,16	1,32	3,79	4,53
Objectivos (+)	52	4,17	1,28	3,82	4,53
Parlamento	52	4,17	1,23	3,83	4,52
Partidos	52	4,17	1,06	3,88	4,47
Cepticismo (-)	53	4,19	1,71	3,72	4,66
Interesses	52	4,19	1,30	3,83	4,55
Competitividade (+)	53	4,21	1,51	3,79	4,62
Mercado (+)	51	4,22	1,43	3,81	4,62
Deputados	53	4,23	0,99	3,95	4,50
Patriotismo	52	4,27	1,75	3,78	4,76
Ministérios	51	4,29	1,35	3,92	4,67
Supérfluo (-)	52	4,29	1,50	3,87	4,71
Impostos (-)	52	4,33	1,41	3,93	4,72
Ministro	52	4,33	1,29	3,97	4,69
Pobreza (-)	52	4,35	1,67	3,88	4,81
Presidente (d)	52	4,37	1,28	4,01	4,72
Individualismo (-)	52	4,40	1,59	3,96	4,85
Gestão (d) (+)	51	4,41	1,42	4,01	4,81
Controlo (d) (-)	52	4,50	1,80	4,00	5,00
Défice (d) (-)	52	4,52	1,16	4,20	4,84
Concorrência (d)	53	4,53	1,20	4,20	4,86
Formalidade (d) (-)	51	4,55	1,25	4,20	4,90
Economicismo (d)	53	4,58	1,38	4,20	4,96
Moção (e)	43	3,95	1,13	3,60	4,30
Proletariado* (e)	44	3,95	1,40	3,53	4,38
Deputados	42	4,00	1,53	3,52	4,48
Bolsa* (d)	40	4,03	1,46	3,56	4,49
Rosa (e)	42	4,07	1,47	3,61	4,53
Vereador	43	4,07	1,26	3,68	4,46
Concorrência (d)	42	4,12	1,48	3,66	4,58
Greve* (e)	43	4,12	1,72	3,59	4,65
Sondagem	43	4,12	1,52	3,65	4,58
Parlamento	43	4,14	1,58	3,65	4,63
Campanha	43	4,16	1,69	3,64	4,68
Massas (e)	43	4,16	1,41	3,73	4,60
Partidos	43	4,19	1,76	3,64	4,73
Meritocracia	43	4,21	1,46	3,76	4,66
Popular	43	4,23	1,48	3,78	4,69
Presidente (d)	42	4,26	1,65	3,75	4,78
Ministérios	43	4,33	1,41	3,89	4,76
Guevara* (e)	43	4,35	1,77	3,80	4,89
Fábrica (e)	41	4,37	1,50	3,89	4,84
Regulamentos (+)	43	4,37	1,00	4,06	4,68
Estado	42	4,40	1,38	3,97	4,83
Patriotismo	43	4,42	1,78	3,87	4,97
Urna	43	4,49	1,62	3,99	4,99
Vermelho* (e) (+)	43	4,49	1,55	4,01	4,97
Discurso	43	4,51	1,68	3,99	5,03
Normas (+)	43	4,51	1,59	4,02	5,00
Constituição (+)	43	4,53	1,47	4,08	4,99
Mercado (+)	43	4,53	1,24	4,15	4,92
Lucro* (d) (+)	43	4,56	1,71	4,03	5,08
Sindicato* (e) (+)	43	4,58	1,40	4,15	5,01
Avante* (e) (+)	43	4,60	1,84	4,04	5,17
Público (+)	43	4,60	1,20	4,24	4,97
Corporativismo (e) (+)	42	4,62	1,71	4,09	5,15
Gestão (d) (+)	43	4,65	1,59	4,16	5,14
Idealismo (+)	44	4,66	1,61	4,17	5,15
Camaradas* (e) (+)	42	4,69	1,94	4,08	5,30
Colectivismo (e) (+)	43	4,70	1,55	4,22	5,18
Ordem (+)	43	4,70	1,52	4,23	5,17
Competitividade (+)	42	4,74	1,56	4,25	5,23
Protesto (e) (+)	43	4,77	1,32	4,36	5,18
Manifestação* (e) (+)	42	4,83	1,43	4,39	5,28
Luta* (e) (+)	42	4,88	1,90	4,29	5,47
Povo* (e) (+)	43	4,88	1,55	4,41	5,36
Liberalismo (+)	44	4,93	1,61	4,44	5,42
Social (e) (+)	43	4,93	1,26	4,54	5,32
Revolução* (e) (+)	43	4,95	1,48	4,50	5,41
Descentralização (e) (+)	42	4,98	1,33	4,56	5,39
Cravo* (e) (+)	43	5,02	1,87	4,45	5,60
Feminismo (e) (+)	43	5,12	1,47	4,66	5,57
Europa (+)	43	5,23	1,38	4,81	5,66
Eficácia (+)	42	5,36	1,65	4,84	5,87
Cidadãos (e) (+)	41	5,41	1,50	4,94	5,89
Objectivos (+)	43	5,42	1,56	4,94	5,90
Voto (+)	43	5,47	1,88	4,89	6,04

Promessas (d) (-)	52	4,65	1,49	4,24	5,07	Flexibilidade (+)	42	5,52	1,64	5,01	6,04
Hierarquia (d) (-)	53	4,68	1,46	4,28	5,08	Abril * (e) (+)	40	5,55	1,47	5,08	6,02
Intolerância (d) (-)	52	4,75	1,53	4,32	5,18	Absolutismo (d) (+)	40	5,55	1,47	5,08	6,02
Opressão (d) (-)	52	4,79	1,89	4,26	5,32	Leis (+)	44	5,57	1,21	5,20	5,94
Autoritarismo (d) (-)	52	4,81	1,90	4,28	5,34	Empreendedorismo (+)	42	5,60	1,48	5,13	6,06
Bolsa* (d)	49	4,88	1,47	4,46	5,30	Democracia (+)	41	5,66	1,68	5,13	6,19
Consumismo* (d) (-)	52	4,92	1,44	4,52	5,32	Comunidade (e) (+)	42	5,71	1,53	5,24	6,19
Elite (d) (-)	52	4,92	1,43	4,53	5,32	União (e) (+)	41	5,73	1,12	5,38	6,08
Lucro* (d) (+)	52	4,92	1,22	4,58	5,26	Partilha (e) (+)	42	5,81	1,53	5,33	6,29
Rigidez (d) (-)	51	4,94	1,58	4,50	5,39	Empenho (+)	41	5,85	1,35	5,43	6,28
Riqueza (d)	52	4,96	1,27	4,61	5,31	Civismo (e) (+)	43	5,86	1,52	5,39	6,33
Conservadorismo (d) (-)	53	5,02	1,78	4,53	5,51	Autonomia (e) (+)	42	5,88	1,53	5,40	6,36
Privado* (d) (-)	52	5,04	1,30	4,68	5,40	Competência (+)	41	5,95	1,30	5,54	6,36
Censura (d) (-)	52	5,08	1,89	4,55	5,60	Humildade (e) (+)	44	6,00	1,40	5,58	6,42
Colonialismo* (d) (-)	52	5,08	1,64	4,62	5,53	Abertura (e) (+)	42	6,02	1,30	5,62	6,43
Capitalismo* (d) (-)	53	5,11	1,65	4,66	5,57	Justiça (+)	43	6,02	1,41	5,59	6,46
Ditadura (d) (-)	52	5,15	2,15	4,56	5,75	Cooperação (e) (+)	41	6,05	1,12	5,70	6,40
Absolutismo (d) (+)	52	5,21	1,82	4,71	5,72	Direitos (e) (+)	43	6,05	1,48	5,59	6,50
Pide (d) (-)	52	5,31	2,17	4,70	5,91	Lealdade (+)	43	6,05	1,36	5,63	6,47
Laranja* (d)	52	5,40	1,59	4,96	5,85	Solidariedade (e) (+)	44	6,14	1,32	5,73	6,54
Bush (d) (-)	51	5,53	1,49	5,11	5,95	Honestidade (e) (+)	42	6,31	1,22	5,93	6,69
Nazismo (d) (-)	50	5,76	1,84	5,24	6,28	Liberdade (e) (+)	43	6,37	1,20	6,00	6,74

(e) palavras avaliadas como *de esquerda;* (d) palavras avaliadas como *de direita*

(+) palavras avaliadas como *positivas;* (-) palavras avaliadas como *negativas*

Quadro 2: Classificação das palavras em função da sua conotação política "esquerda / direita" e valência percebida "negativa / positiva" (participantes com orientação política de esquerda)

Conotação Política						Valência					
Palavras	**N**	**M**	**DP**	**Int. Conf. 95%**		**Palavras**	**N**	**M**	**DP**	**Int. Conf. 95%**	
				LI	**LS**					**LI**	**LS**
Camaradas* (e) (+)	24	1,75	1,42	1,15	2,35	Nazismo (d) (-)	18	1,33	0,84	0,92	1,75
Abril* (e) (+)	22	1,82	0,96	1,39	2,24	Censura (d) (-)	17	1,35	0,86	0,91	1,80
Cravo* (e) (+)	24	1,83	1,34	1,27	2,40	Ditadura (d) (-)	17	1,35	0,86	0,91	1,80
Comunismo* (e)	24	1,88	1,45	1,26	2,49	Opressão (d) (-)	18	1,50	1,04	0,98	2,02
Avante* (e) (+)	24	2,00	1,53	1,35	2,65	Pide (d) (-)	18	1,50	1,47	0,77	2,23
Abertura (e) (+)	23	2,04	1,02	1,60	2,49	Absolutismo (d) (-)	17	1,65	1,06	1,10	2,19
Guevara* (e) (+)	23	2,04	1,58	1,36	2,73	Intolerância (d) (-)	18	1,67	1,08	1,13	2,21
Revolução* (e) (+)	23	2,04	1,33	1,47	2,62	Autoritarismo (d) (-)	16	1,69	1,62	0,82	2,55
Cooperação (e) (+)	24	2,13	1,19	1,62	2,63	Bush (d) (-)	16	1,75	1,24	1,09	2,41
Luta* (e) (+)	22	2,23	1,19	1,70	2,76	Elite (d) (-)	16	1,75	1,00	1,22	2,28
Colectivismo (e) (+)	24	2,29	1,27	1,76	2,83	Pobreza (-)	18	1,78	1,48	1,04	2,51
Povo* (e) (+)	23	2,30	1,26	1,76	2,85	Défice (d) (-)	16	1,81	0,98	1,29	2,34
Proletariado* (e)	23	2,35	1,23	1,82	2,88	Conservadorismo (d) (-)	17	2,00	1,22	1,37	2,63
Vermelho* (e) (+)	23	2,35	1,61	1,65	3,05	Colonialismo* (d) (-)	17	2,18	1,70	1,30	3,05
Foice* (e)	24	2,38	1,41	1,78	2,97	Rigidez (d) (-)	18	2,22	1,22	1,62	2,83
Sindicato* (e) (+)	23	2,43	1,38	1,84	3,03	Supérfluo (d) (-)	18	2,22	1,48	1,49	2,96
União (e) (+)	23	2,48	1,27	1,93	3,03	Capitalismo* (d) (-)	17	2,29	1,45	1,55	3,04
Liberdade (e) (+)	23	2,52	1,24	1,99	3,06	Individualismo (-)	18	2,39	1,29	1,75	3,03
Solidariedade (e) (+)	23	2,52	1,34	1,94	3,10	Anarquismo (-)	16	2,44	1,75	1,50	3,37
Manifestação* (e) (+)	23	2,57	1,24	2,03	3,10	Estalinismo (-)	16	2,44	1,97	1,39	3,48
Comunidade (e) (+)	24	2,58	1,14	2,10	3,06	Cepticismo (-)	17	2,47	1,33	1,79	3,15
Feminismo (e) (+)	24	2,58	1,32	2,03	3,14	Consumismo* (d) (-)	17	2,47	1,50	1,70	3,24
Martelo* (e) (+)	22	2,59	1,50	1,93	3,26	Anulação (-)	16	2,56	1,63	1,69	3,43
Protesto (e) (+)	23	2,65	1,47	2,02	3,29	Hierarquia (d) (-)	17	2,59	1,46	1,84	3,34
Autonomia (e) (+)	24	2,67	1,69	1,95	3,38	Controlo (d) (-)	17	2,65	1,97	1,64	3,66
Corporativismo (e) (+)	24	2,71	1,78	1,96	3,46	Fidel (-)	17	2,82	1,91	1,84	3,81
Partilha (e) (+)	24	2,79	1,38	2,21	3,38	Laranja* (d) (-)	17	2,82	1,29	2,16	3,48
Honestidade (e) (+)	24	2,79	1,32	2,24	3,35	Riqueza (d) (-)	17	2,82	1,78	1,91	3,74
Direitos (e) (+)	24	2,88	1,30	2,33	3,42	Privado* (d) (-)	17	2,88	1,22	2,26	3,51
Humildade (e) (+)	23	2,96	1,22	2,43	3,49	Promessas (d) (-)	18	2,89	1,68	2,06	3,72
Civismo (e) (+)	24	3,00	1,29	2,46	3,54	Formalidade (d) (-)	17	2,94	1,39	2,23	3,66
Marxismo* (e)	23	3,00	1,98	2,15	3,85	Impostos (d) (-)	18	2,94	1,73	2,08	3,81
Flexibilidade (e) (+)	24	3,04	1,37	2,46	3,62	Cuba (-)	17	3,00	1,90	2,02	3,98
Greve* (e)	23	3,04	1,52	2,39	3,70	Economicismo (d) (-)	17	3,12	1,45	2,37	3,86
Leninismo	22	3,09	2,14	2,14	4,04	Trotskismo (-)	16	3,13	1,36	2,40	3,85
Massas (e)	23	3,09	1,44	2,46	3,71	Concorrência	17	3,24	1,64	2,39	4,08
Anarquismo (-)	23	3,13	2,03	2,25	4,01	Leninismo	18	3,28	1,81	2,38	4,18
Cidadãos (e) (+)	24	3,13	1,48	2,50	3,75	Utopia	18	3,28	1,81	2,38	4,18
Cuba (-)	24	3,17	2,28	2,20	4,13	Classe	16	3,38	1,50	2,58	4,17
Social (e) (+)	23	3,17	1,37	2,58	3,77	Minorias	16	3,38	1,78	2,42	4,33
Fábrica (e)	24	3,21	1,67	2,50	3,91	Presidente	17	3,47	1,77	2,56	4,38
Fidel (-)	24	3,21	2,28	2,24	4,17	Patronato	18	3,50	1,29	2,86	4,14
Lealdade (e) (+)	23	3,35	1,34	2,77	3,93	Interesses	18	3,56	1,69	2,72	4,40
Voto (e) (+)	22	3,36	1,18	2,84	3,89	Lucro* (d)	18	3,61	1,58	2,83	4,40
Democracia (+)	24	3,38	1,56	2,72	4,03	Partidos	18	3,61	1,88	2,67	4,55
Justiça (+)	23	3,39	1,44	2,77	4,01	Ministro	17	3,65	1,58	2,84	4,46
Público (e) (+)	23	3,39	1,34	2,81	3,97	Parlamento	18	3,67	1,57	2,89	4,45

Popular	22	3,41	1,89	2,57	4,25
Competência (e) (+)	24	3,42	1,32	2,86	3,97
Descentralização (+)	24	3,46	1,47	2,84	4,08
Eficácia (e) (+)	24	3,46	1,06	3,01	3,91
Empenho (e) (+)	24	3,46	1,18	2,96	3,96
Estrela	24	3,46	1,41	2,86	4,06
Trotskismo (-)	24	3,46	1,77	2,71	4,21
Idealismo	23	3,48	1,68	2,75	4,20
Utopia	23	3,48	1,95	2,63	4,32
Constituição	24	3,54	1,35	2,97	4,11
Empreendedorismo (+)	24	3,54	1,53	2,89	4,19
Liberalismo	23	3,57	2,09	2,66	4,47
Moção	24	3,58	1,06	3,14	4,03
Campanha	24	3,67	1,79	2,91	4,42
Europa (+)	24	3,67	1,05	3,22	4,11
Minorias	24	3,67	1,63	2,98	4,36
Rosa	23	3,70	1,61	3,00	4,39
Estalinismo (-)	23	3,74	2,63	2,60	4,88
Vereador	23	3,74	1,32	3,17	4,31
Classe	24	3,75	1,85	2,97	4,53
Urna	22	3,77	1,38	3,16	4,38
Meritocracia	23	3,78	1,17	3,28	4,29
Objectivos (+)	23	3,83	1,07	3,36	4,29
Leis (+)	23	3,83	1,44	3,21	4,45
Discurso	24	4,00	1,41	3,40	4,60
Estado	24	4,00	1,72	3,27	4,73
Partidos	23	4,00	0,95	3,59	4,41
Sondagem	22	4,00	1,23	3,45	4,55
Parlamento	23	4,04	1,33	3,47	4,62
Regulamentos	23	4,04	1,07	3,58	4,50
Competitividade	24	4,08	1,56	3,43	4,74
Governo	22	4,09	1,57	3,39	4,79
Patronato	23	4,09	1,81	3,31	4,87
Deputados	24	4,13	1,19	3,62	4,63
Ordem (+)	23	4,13	1,46	3,50	4,76
Mercado	22	4,18	1,65	3,45	4,91
Normas	24	4,25	1,33	3,69	4,81
Interesses	23	4,39	1,62	3,69	5,09
Presidente	23	4,39	1,59	3,70	5,08
Ministro	24	4,42	1,56	3,76	5,07
Gestão	23	4,43	1,44	3,81	5,06
Patriotismo	23	4,43	1,93	3,60	5,27
Ministérios	22	4,50	1,44	3,86	5,14
Anulação (-)	23	4,52	1,59	3,83	5,21
Cepticismo (-)	24	4,54	1,86	3,75	5,33
Concorrência	24	4,58	1,44	3,97	5,19
Impostos (d) (-)	23	4,70	1,52	4,04	5,35
Individualismo (-)	23	4,70	1,77	3,93	5,46
Pobreza (-)	23	4,70	1,92	3,87	5,52
Controlo (d) (-)	24	4,83	1,79	4,08	5,59
Economicismo (d) (-)	24	4,83	1,43	4,23	5,44
Formalidade (d) (-)	22	4,95	1,29	4,38	5,53
Défice (d) (-)	24	4,96	1,43	4,35	5,56
Promessas (d) (-)	23	5,00	1,62	4,30	5,70
Ministérios	17	3,88	1,54	3,09	4,67
Campanha	17	3,94	1,75	3,04	4,84
Governo	18	4,00	1,61	3,20	4,80
Idealismo	18	4,00	1,81	3,10	4,90
Marxismo* (e)	18	4,00	1,85	3,08	4,92
Popular	18	4,00	1,57	3,22	4,78
Estrela	17	4,06	1,71	3,18	4,94
Moção	17	4,12	1,45	3,37	4,86
Bolsa* (d)	15	4,13	1,77	3,15	5,11
Deputados	17	4,18	1,38	3,47	4,89
Sondagem	17	4,18	1,63	3,34	5,01
Meritocracia	18	4,28	1,41	3,58	4,98
Proletariado* (e)	18	4,28	1,49	3,54	5,02
Vereador	18	4,28	1,13	3,72	4,84
Competitividade	17	4,29	1,72	3,41	5,18
Rosa	17	4,29	1,69	3,43	5,16
Patriotismo	18	4,33	1,88	3,40	5,27
Comunismo* (e)	17	4,35	1,93	3,36	5,35
Greve* (e)	18	4,39	1,42	3,68	5,10
Massas (e)	18	4,39	1,46	3,66	5,12
Mercado	18	4,39	1,54	3,62	5,15
Discurso	17	4,41	1,42	3,68	5,14
Regulamentos	18	4,44	1,20	3,85	5,04
Foice* (e)	17	4,47	1,50	3,70	5,24
Normas	17	4,53	1,84	3,58	5,48
Fábrica (e)	16	4,56	1,75	3,63	5,50
Constituição	17	4,59	1,37	3,88	5,29
Estado	17	4,65	1,58	3,84	5,46
Martelo* (e) (+)	17	4,76	1,15	4,17	5,35
Liberalismo	18	4,78	1,93	3,82	5,74
Sindicato* (e) (+)	18	4,78	1,40	4,08	5,47
Urna	18	4,78	1,70	3,93	5,62
Gestão	17	4,82	1,63	3,99	5,66
Social (e) (+)	18	4,89	1,71	4,04	5,74
Europa (+)	17	4,94	1,52	4,16	5,72
Ordem (+)	17	4,94	1,30	4,27	5,61
Público (e) (+)	17	4,94	1,25	4,30	5,58
Manifestação* (e) (+)	17	5,00	1,32	4,32	5,68
Descentralização (+)	17	5,12	1,22	4,49	5,74
Corporativismo (e) (+)	16	5,13	1,82	4,15	6,10
Guevara* (e) (+)	18	5,17	1,58	4,38	5,95
Povo* (e) (+)	18	5,17	1,34	4,50	5,83
Protesto (e) (+)	18	5,17	1,20	4,57	5,76
Vermelho* (e) (+)	18	5,22	1,59	4,43	6,01
Colectivismo (e) (+)	17	5,24	1,52	4,45	6,02
Luta* (e) (+)	17	5,24	1,86	4,28	6,19
Eficácia (e) (+)	17	5,29	1,49	4,53	6,06
Feminismo (e) (+)	17	5,41	1,54	4,62	6,21
Leis (+)	18	5,56	1,15	4,98	6,13
Revolução* (e) (+)	18	5,56	1,29	4,91	6,20
Flexibilidade (e)(+)	17	5,65	1,62	4,82	6,48
Objectivos (+)	18	5,67	1,53	4,90	6,43
Voto (e) (+)	18	5,67	1,88	4,73	6,60
Cidadãos (e) (+)	16	5,69	1,40	4,94	6,43

Bolsa* (d)	22	5,05	1,50	4,38	5,71	Avante* (e) (+)	17	5,71	1,40	4,98	6,43
Supérfluo (d) (-)	23	5,09	1,41	4,48	5,70	Camaradas* (e) (+)	17	5,76	1,68	4,90	6,63
Hierarquia (d) (-)	24	5,13	1,60	4,45	5,80	Empreendedorismo (+)	17	5,82	1,38	5,11	6,53
Colonialismo* (d) (-)	24	5,21	1,67	4,50	5,91	Abertura (e) (+)	18	5,94	1,47	5,21	6,68
Intolerância (d) (-)	23	5,30	1,36	4,71	5,89	Cravo* (e) (+)	17	5,94	1,39	5,23	6,66
Rigidez (d) (-)	23	5,30	1,66	4,59	6,02	Humildade (e) (+)	18	5,94	1,51	5,19	6,70
Conservadorismo (d) (-)	24	5,33	1,69	4,62	6,05	Justiça (+)	18	6,00	1,24	5,39	6,61
Consumismo* (d) (-)	23	5,39	1,50	4,74	6,04	Abril * (e) (+)	16	6,06	1,18	5,43	6,69
Opressão (d) (-)	23	5,48	1,78	4,71	6,25	Competência (e) (+)	17	6,06	1,39	5,34	6,77
Elite (d) (-)	23	5,52	1,27	4,97	6,07	Empenho (e) (+)	17	6,06	1,25	5,42	6,70
Lucro* (d)	23	5,52	1,31	4,96	6,09	Lealdade (e) (+)	18	6,06	1,47	5,32	6,79
Riqueza (d) (-)	23	5,52	1,38	4,93	6,12	Solidariedade (e) (+)	18	6,06	1,39	5,36	6,75
Privado* (d) (-)	23	5,61	1,31	5,04	6,17	União (e) (+)	16	6,06	0,93	5,57	6,56
Capitalismo* (d) (-)	24	5,71	1,37	5,13	6,29	Civismo (e) (+)	17	6,12	1,22	5,49	6,74
Autoritarismo(d) (-)	24	5,75	1,39	5,16	6,34	Comunidade (e) (+)	17	6,18	1,24	5,54	6,81
Censura (d) (-)	23	5,87	1,36	5,28	6,46	Partilha (e) (+)	17	6,18	1,19	5,57	6,79
Laranja* (d) (-)	23	5,91	1,16	5,41	6,42	Democracia (+)	16	6,31	1,20	5,68	6,95
Pide (d) (-)	23	5,91	1,68	5,19	6,64	Direitos (e) (+)	17	6,35	1,17	5,75	6,95
Absolutismo (d) (-)	23	6,00	1,13	5,51	6,49	Autonomia (e) (+)	17	6,47	0,80	6,06	6,88
Ditadura (d) (-)	24	6,08	1,53	5,44	6,73	Honestidade (e) (+)	17	6,53	0,87	6,08	6,98
Bush (d) (-)	23	6,09	1,08	5,62	6,56	Liberdade (e) (+)	17	6,59	0,80	6,18	7,00
Nazismo (d) (-)	22	6,50	0,96	6,07	6,93	Cooperação (e) (+)	16	6,63	0,50	6,36	6,89

(e) palavras avaliadas como *de esquerda;* (d) palavras avaliadas como *de direita*

(+) palavras avaliadas como *positivas;* (-) palavras avaliadas como *negativas*

(*) palavras avaliadas de igual modo relativamente à sua conotação política por respondentes com orientações políticas opostas.

Quadro 3: Classificação das palavras em função da sua conotação política "esquerda / direita" e valência percebida "negativa / positiva" (participantes com orientação política de direita)

Conotação política						Valência					
Palavras	**N**	**M**	**DP**	**Int. Conf. 95%**		**Palavras**	**N**	**M**	**DP**	**Int. Conf. 95%**	
				LI	**LS**					**LI**	**LS**
Avante* (e)	12	1,42	0,90	0,84	1,99	Ditadura (-)	11	1,27	0,65	0,84	1,71
Leninismo (e) (-)	12	1,42	0,90	0,84	1,99	Pide (-)	11	1,27	0,90	0,67	1,88
Marxismo* (e) (-)	12	1,50	0,90	0,93	2,07	Nazismo (-)	11	1,36	0,92	0,74	1,98
Estalinismo (e) (-)	12	1,58	1,16	0,84	2,32	Censura (-)	11	1,82	1,54	0,79	2,85
Comunismo* (e) (-)	12	1,67	1,50	0,72	2,62	Comunismo* (e) (-)	11	1,82	1,25	0,98	2,66
Foice* (e) (-)	12	1,67	1,15	0,93	2,40	Opressão (-)	11	1,82	1,33	0,93	2,71
Fidel (e) (-)	12	1,75	1,14	1,03	2,47	Leninismo (e) (-)	11	1,82	1,17	1,03	2,60
Camaradas* (e)	12	1,83	1,70	0,76	2,91	Défice (-)	11	1,91	1,64	0,81	3,01
Trotskismo (e) (-)	10	1,90	1,20	1,04	2,76	Intolerância (-)	11	1,91	1,30	1,04	2,78
Greve* (e)	12	1,92	1,00	1,28	2,55	Pobreza (-)	11	1,91	1,38	0,99	2,83
Martelo* (e) (-)	12	1,92	1,38	1,04	2,79	Supérfluo (-)	11	2,00	1,10	1,26	2,74
Anarquismo (e) (-)	12	2,00	1,04	1,34	2,66	Trotskismo (e) (-)	9	2,00	1,50	0,85	3,15
Cravo* (e) (+)	12	2,00	1,71	0,92	3,08	Estalinismo (e) (-)	11	2,09	1,64	0,99	3,19
Guevara* (e)	12	2,00	1,04	1,34	2,66	Fidel (e) (-)	11	2,09	1,45	1,12	3,06
Sindicato* (e)	12	2,17	1,11	1,46	2,87	Anulação (-)	11	2,18	1,33	1,29	3,07
Cuba (e)	12	2,25	2,26	0,81	3,69	Marxismo* (e) (-)	11	2,27	1,27	1,42	3,13
Manifestação* (e)	12	2,50	0,90	1,93	3,07	Utopia (-)	11	2,27	1,27	1,42	3,13
Proletariado* (e)	12	2,50	1,24	1,71	3,29	Anarquismo (e) (-)	11	2,36	1,57	1,31	3,42
Vermelho* (e)	12	2,50	1,78	1,37	3,63	Autoritarismo (-)	10	2,40	1,90	1,04	3,76
Revolução* (e) (+)	12	2,58	1,16	1,84	3,32	Conservadorismo (-)	10	2,40	1,58	1,27	3,53
Abril* (e) (+)	12	2,67	1,44	1,75	3,58	Bush (-)	10	2,50	1,65	1,32	3,68
Luta* (e)	12	2,75	1,06	2,08	3,42	Elite (-)	11	2,55	1,51	1,53	3,56
Colectivismo	12	2,92	2,02	1,63	4,20	Foice* (e) (-)	11	2,55	1,21	1,73	3,36
Povo* (e)	12	3,00	1,13	2,28	3,72	Impostos (-)	11	2,55	1,44	1,58	3,51
Estrela	12	3,08	1,78	1,95	4,22	Absolutismo (-)	11	2,64	1,69	1,50	3,77
Fábrica	12	3,08	1,73	1,98	4,18	Individualismo (-)	11	2,64	1,91	1,35	3,92
Massas	12	3,25	1,48	2,31	4,19	Colonialismo* (d) (-)	11	2,73	1,49	1,73	3,73
Utopia (-)	12	3,25	2,05	1,95	4,55	Consumismo* (d) (-)	11	2,73	1,10	1,99	3,47
Autoritarismo (-)	12	3,33	2,06	2,02	4,64	Rigidez (-)	11	2,73	1,49	1,73	3,73
Opressão (-)	12	3,33	1,92	2,11	4,55	Martelo* (e) (-)	11	2,82	1,25	1,98	3,66
Protesto	12	3,33	1,23	2,55	4,12	Promessas (-)	11	2,91	1,51	1,89	3,93
Absolutismo (-)	12	3,42	1,93	2,19	4,64	Controlo (-)	11	3,00	1,00	2,33	3,67
Moção	12	3,42	1,16	2,68	4,16	Guevara* (e)	11	3,09	1,81	1,87	4,31
Rosa	11	3,45	1,97	2,13	4,78	Cepticismo	11	3,18	1,66	2,06	4,30
Classe	12	3,58	1,56	2,59	4,58	Minorias	10	3,30	1,42	2,29	4,31
Feminismo	12	3,58	1,44	2,67	4,50	Deputados	11	3,45	1,92	2,17	4,74
Idealismo (+)	12	3,58	1,16	2,84	4,32	Proletariado* (e)	11	3,45	0,93	2,83	4,08
Público	12	3,58	1,38	2,71	4,46	Rosa	11	3,45	1,44	2,49	4,42
Corporativismo (+)	12	3,67	1,56	2,68	4,66	Avante* (e)	11	3,55	2,21	2,06	5,03
Meritocracia	11	3,73	1,01	3,05	4,41	Capitalismo* (d)	11	3,64	1,36	2,72	4,55
Governo	12	3,75	1,42	2,85	4,65	Governo	11	3,64	1,50	2,63	4,65
Minorias	12	3,75	1,86	2,57	4,93	Massas	11	3,64	1,21	2,83	4,45
Popular	12	3,75	1,71	2,66	4,84	Cuba (e)	11	3,73	2,49	2,05	5,40
Urna	12	3,75	1,60	2,73	4,77	Economicismo	11	3,73	1,19	2,93	4,53
Anulação (-)	12	3,83	1,99	2,57	5,10	Vereador	11	3,73	1,35	2,82	4,63
Estado	12	3,83	1,11	3,13	4,54	Vermelho* (e)	11	3,73	1,62	2,64	4,81
Sondagem	12	3,83	1,03	3,18	4,49	Moção	11	3,73	0,65	3,29	4,16
Supérfluo (-)	12	3,83	1,53	2,86	4,80	Estrela	11	3,91	1,30	3,04	4,78

Cepticismo	12	3,92	1,51	2,96	4,87
Descentralização (+)	12	3,92	1,31	3,08	4,75
Discurso	12	3,92	1,44	3,00	4,83
Partilha (+)	12	3,92	1,62	2,89	4,95
Vereador	12	3,92	1,31	3,08	4,75
Voto	12	3,92	1,83	2,75	5,08
Cidadãos	12	4,00	1,13	3,28	4,72
Impostos (-)	12	4,00	1,95	2,76	5,24
Lealdade (+)	12	4,00	1,28	3,19	4,81
Patronato	12	4,00	1,21	3,23	4,77
Campanha	13	4,08	1,38	3,24	4,91
Direitos (+)	12	4,08	1,44	3,17	5,00
Ditadura (-)	12	4,08	2,71	2,36	5,81
Ordem (+)	12	4,08	1,31	3,25	4,92
Regulamentos	12	4,08	0,79	3,58	4,59
Solidariedade (+)	12	4,08	1,56	3,09	5,08
Censura (-)	12	4,17	2,48	2,59	5,74
Ministérios	12	4,17	1,27	3,36	4,97
Pobreza (-)	12	4,17	1,80	3,02	5,31
Abertura (+)	12	4,25	1,60	3,23	5,27
Défice (-)	12	4,25	1,06	3,58	4,92
Empenho (+)	12	4,25	1,06	3,58	4,92
Honestidade (+)	12	4,25	1,48	3,31	5,19
Interesses	12	4,25	0,62	3,86	4,64
Parlamento	12	4,25	1,60	3,23	5,27
Partidos	12	4,25	1,48	3,31	5,19
União (+)	12	4,25	1,42	3,35	5,15
Cooperação (+)	12	4,33	1,44	3,42	5,25
Normas	12	4,33	1,56	3,34	5,32
Individualismo (-)	12	4,33	1,78	3,21	5,46
Intolerância (-)	12	4,33	1,83	3,17	5,49
Justiça (+)	12	4,33	1,30	3,51	5,16
Liberalismo (+)	12	4,33	1,83	3,17	5,49
Liberdade (+)	12	4,33	1,56	3,34	5,32
Ministro	12	4,33	1,15	3,60	5,07
Rigidez (-)	12	4,33	1,67	3,27	5,39
Social (+)	12	4,33	0,78	3,84	4,83
Autonomia (+)	12	4,42	1,51	3,46	5,37
Civismo (+)	12	4,42	1,24	3,63	5,20
Comunidade (+)	12	4,42	1,08	3,73	5,11
Constituição	12	4,42	0,79	3,91	4,92
Controlo (-)	12	4,42	1,83	3,25	5,58
Deputados	12	4,42	0,90	3,84	4,99
Formalidade	12	4,42	0,90	3,84	4,99
Humildade (+)	12	4,42	1,51	3,46	5,37
Leis (+)	12	4,42	0,79	3,91	4,92
Hierarquia	12	4,50	0,80	3,99	5,01
Promessas (-)	12	4,50	1,51	3,54	5,46
Riqueza	12	4,50	0,90	3,93	5,07
Elite (-)	12	4,58	1,31	3,75	5,42
Mercado (+)	12	4,58	1,44	3,67	5,50
Bush (-)	12	4,67	1,72	3,57	5,76
Democracia (+)	12	4,67	1,23	3,88	5,45
Eficácia (+)	12	4,67	1,56	3,68	5,66
Formalidade	11	3,91	0,83	3,35	4,47
Bolsa* (d)	11	4,00	1,10	3,26	4,74
Hierarquia	11	4,00	1,00	3,33	4,67
Interesses	11	4,00	1,41	3,05	4,95
Ministro	11	4,00	1,48	3,00	5,00
Privado* (d)	11	4,00	1,18	3,21	4,79
Regulamentos	11	4,00	0,45	3,70	4,30
Camaradas* (e)	11	4,09	2,07	2,70	5,48
Colectivismo	11	4,09	1,70	2,95	5,23
Público	11	4,09	1,38	3,17	5,01
Sondagem	11	4,09	1,45	3,12	5,06
Urna	11	4,18	1,94	2,88	5,49
Meritocracia	10	4,20	1,14	3,39	5,01
Parlamento	11	4,27	1,74	3,11	5,44
Sindicato* (e)	11	4,27	1,01	3,59	4,95
Luta* (e)	11	4,36	2,01	3,01	5,72
Partidos	11	4,36	1,75	3,19	5,54
Protesto	11	4,36	1,63	3,27	5,46
Estado	11	4,45	1,51	3,44	5,47
Greve* (e)	11	4,45	2,07	3,07	5,84
Manifestação* (e)	11	4,45	1,51	3,44	5,47
Patronato	11	4,45	1,21	3,64	5,27
Povo* (e)	11	4,45	1,97	3,13	5,78
Voto	11	4,45	2,30	2,91	6,00
Concorrência (d)	11	4,64	1,03	3,95	5,33
Fábrica	11	4,64	1,43	3,67	5,60
Normas	11	4,64	1,29	3,77	5,50
Ministérios	11	4,64	1,29	3,77	5,50
Campanha	11	4,73	1,85	3,49	5,97
Constituição	11	4,73	1,35	3,82	5,63
Discurso	11	4,73	1,85	3,49	5,97
Laranja* (d)	11	4,73	1,85	3,49	5,97
Mercado (+)	11	4,73	0,90	4,12	5,33
Classe	11	4,82	1,33	3,93	5,71
Riqueza	11	4,82	1,25	3,98	5,66
Feminismo	11	4,91	1,45	3,94	5,88
Popular	11	4,91	1,45	3,94	5,88
Revolução* (e) (+)	11	4,91	1,04	4,21	5,61
Cidadãos	11	5,00	1,61	3,92	6,08
Cravo* (e) (+)	11	5,00	1,34	4,10	5,90
Gestão (d)	11	5,00	1,61	3,92	6,08
Ordem (+)	11	5,00	1,48	4,00	6,00
Presidente (d)	11	5,00	1,61	3,92	6,08
Abril * (e) (+)	11	5,09	1,58	4,03	6,15
Competitividade	11	5,09	1,64	3,99	6,19
Corporativismo (+)	11	5,09	1,14	4,33	5,85
Patriotismo (d)	11	5,09	1,64	3,99	6,19
Descentralização (+)	11	5,18	1,25	4,34	6,02
Lucro* (d) (+)	11	5,18	1,08	4,46	5,91
Social (+)	11	5,18	1,33	4,29	6,07
Idealismo (+)	11	5,45	1,04	4,76	6,15
Liberalismo (+)	11	5,45	1,51	4,44	6,47
Autonomia (+)	11	5,55	1,75	4,37	6,72
Leis (+)	11	5,55	1,29	4,68	6,41

Objectivos (+)	12	4,67	1,78	3,54	5,79	Cooperação (+)	11	5,64	1,12	4,88	6,39
Competitividade	12	4,75	1,91	3,53	5,97	Democracia (+)	11	5,64	1,69	4,50	6,77
Conservadorismo (-)	12	4,75	1,96	3,50	6,00	Objectivos (+)	11	5,64	1,43	4,67	6,60
Lucro* (d) (+)	12	4,75	1,06	4,08	5,42	Europa (d) (+)	11	5,73	1,19	4,93	6,53
Economicismo	12	4,83	1,40	3,94	5,73	Comunidade (+)	11	5,82	1,54	4,79	6,85
Empreendedorismo (+)	12	4,83	1,40	3,94	5,73	Empenho (+)	11	5,82	1,33	4,93	6,71
Flexibilidade (+)	12	4,83	1,85	3,66	6,01	Empreendedorismo (+)	11	5,82	1,54	4,79	6,85
Pide (-)	12	4,83	2,69	3,12	6,54	Flexibilidade (+)	11	5,82	1,47	4,83	6,81
Concorrência (d)	12	4,92	1,16	4,18	5,66	União (+)	11	5,82	1,08	5,09	6,54
Europa (d) (+)	12	4,92	1,08	4,23	5,61	Eficácia (+)	11	5,91	1,38	4,99	6,83
Nazismo (-)	12	4,92	2,54	3,30	6,53	Civismo (+)	11	6,00	1,55	4,96	7,04
Presidente (d)	12	4,92	1,38	4,04	5,79	Direitos (+)	11	6,09	1,38	5,17	7,01
Patriotismo (d)	12	5,00	1,60	3,99	6,01	Partilha (+)	11	6,09	1,45	5,12	7,06
Competência (d) (+)	12	5,00	1,21	4,23	5,77	Abertura (+)	11	6,27	1,27	5,42	7,13
Consumismo* (d) (-)	12	5,00	1,28	4,19	5,81	Competência (d) (+)	11	6,27	1,01	5,59	6,95
Gestão (d)	12	5,00	1,54	4,02	5,98	Humildade (+)	11	6,27	1,19	5,47	7,07
Capitalismo* (d)	12	5,17	1,75	4,06	6,28	Justiça (+)	11	6,27	1,01	5,59	6,95
Colonialismo* (d) (-)	12	5,17	1,34	4,32	6,02	Lealdade (+)	11	6,36	1,03	5,67	7,05
Privado* (d)	12	5,25	1,29	4,43	6,07	Liberdade (+)	11	6,36	1,21	5,55	7,17
Bolsa* (d)	12	5,33	1,37	4,46	6,20	Solidariedade (+)	11	6,45	0,93	5,83	7,08
Laranja* (d)	12	6,00	1,04	5,34	6,66	Honestidade (+)	11	6,55	0,93	5,92	7,17

(e) palavras avaliadas como *de esquerda;* (d) palavras avaliadas como *de direita*

(+) palavras avaliadas como *positivas;* (-) palavras avaliadas como *negativas*

(*) palavras avaliadas de igual modo relativamente à sua conotação política por respondentes com orientações políticas opostas.

Anexo A: Questionário

Curso: **Ano:** **Sexo:** **Idade:**

Por favor indique em que medida as seguintes palavras evocam os conceitos políticos de "esquerda" (E) ou de "direita" (D) e se são mais "negativos" (-) ou "positivos" (+). Pretendemos a sua resposta rápida e intuitiva. Indique a sua resposta com uma cruz no respectivo quadrado.

Abertura	E								D
	-								+
Abril	E								D
	-								+
Absolutismo	E								D
	-								+
Anarquismo	E								D
	-								+
Anulação	E								D
	-								+
Autonomia	E								D
	-								+
Autoritarismo	E								D
	-								+
Avante	E								D
	-								+
Bolsa	E								D
	-								+
Bush	E								D
	-								+
Camaradas	E								D
	-								+
Campanha	E								D
	-								+
Capitalismo	E								D
	-								+
Censura	E								D
	-								+
Cepticismo	E								D
	-								+
Cidadãos	E								D
	-								+
Civismo	E								D
	-								+
Classe	E								D
	-								+
Colectivismo	E								D
	-								+
Colonialismo	E								D
	-								+
Competência	E								D
	-								+
Competitividade	E								D
	-								+
Comunidade	E								D
	-								+
Comunismo	E								D
	-								+
Concorrência	E								D
	-								+
Conservadorism	E								D
	-								+
Constituição	E								D
	-								+
Consumismo	E								D
	-								+
Controlo	E								D
	-								+
Cooperação	E								D
	-								+
Corporativismo	E								D
	-								+

Cravo	E								D
	-								+
Cuba	E								D
	-								+
Défice	E								D
	-								+
Democracia	E								D
	-								+
Deputados	E								D
	-								+
Descentralização	E								D
	-								+
Direitos	E								D
	-								+
Discurso	E								D
	-								+
Ditadura	E								D
	-								+
Economicismo	E								D
	-								+
Eficácia	E								D
	-								+
Elite	E								D
	-								+
Empenho	E								D
	-								+
Empreendedorism	E								D
	-								+
Estado	E								D
	-								+
Estalinismo	E								D
	-								+
Estrela	E								D
	-								+
Europa	E								D
	-								+
Fábrica	E								D
	-								+
Feminismo	E								D
	-								+
Fidel	E								D
	-								+
Flexibilidade	E								D
	-								+
Foice	E								D
	-								+
Formalidade	E								D
	-								+
Gestão	E								D
	-								+
Normas	E								D
	-								+
Objectivos	E								D
	-								+
Opressão	E								D
	-								+
Governo	E								D
	-								+
Greve	E								D
	-								+
Guevara	E								D
	-								+

Hierarquia	E								D
	-								+
Honestidade	E								D
	-								+
Humildade	E								D
	-								+
Idealismo	E								D
	-								+
Impostos	E								D
	-								+
Individualismo	E								D
	-								+
Interesses	E								D
	-								+
Intolerância	E								D
	-								+
Justiça	E								D
	-								+
Laranja	E								D
	-								+
Lealdade	E								D
	-								+
Leis	E								D
	-								+
Leninismo	E								D
	-								+
Liberalismo	E								D
	-								+
Liberdade	E								D
	-								+
Lucro	E								D
	-								+
Luta	E								D
	-								+
Manifestação	E								D
	-								+
Martelo	E								D
	-								+
Marxismo	E								D
	-								+
Massas	E								D
	-								+
Mercado	E								D
	-								+
Meritocracia	E								D
	-								+
Ministérios	E								D
	-								+
Ministro	E								D
	-								+
Minorias	E								D
	-								+
Moção	E								D
	-								+
Nazismo	E								D
	-								+
Ordem	E								D
	-								+
Parlamento	E								D
	-								+
Partidos	E								D
	-								+

Partilha	E								D
	-								+
Patriotismo	E								D
	-								+
Patronato	E								D
	-								+
Pide	E								D
	-								+
Pobreza	E								D
	-								+
Popular	E								D
	-								+
Povo	E								D
	-								+
Presidente	E								D
	-								+
Privado	E								D
	-								+
Proletariado	E								D
	-								+
Promessas	E								D
	-								+
Protesto	E								D
	-								+
Público	E								D
	-								+
Regulamentos	E								D
	-								+
Revolução	E								D
	-								+
Rigidez	E								D
	-								+
Riqueza	E								D
	-								+
Rosa	E								D
	-								+
Sindicato	E								D
	-								+
Social	E								D
	-								+
Solidariedade	E								D
	-								+
Sondagem	E								D
	-								+
Supérfluo	E								D
	-								+
Trotskismo	E								D
	-								+
União	E								D
	-								+
Urna	E								D
	-								+
Utopia	E								D
	-								+
Vereador	E								D
	-								+
Vermelho	E								D
	-								+
Voto	E								D
	-								+

Responda por favor às seguintes questões indicando a sua resposta com uma cruz no quadrado respectivo.

Qual o seu interesse pela política?

Nenhum interesse — Relativo interesse — Muito interesse

Qual a importância que atribui à política na sua vida?

Nenhuma importância — Relativo interesse — Muita importância

Quando está com pessoas amigas, com que frequência discute assuntos políticos?

Nunca — Às vezes — Frequentemente

Para cada uma das diferentes formas de acção política indique se alguma vez fez, se não fez, mas admite fazer ou se não fez e não admite fazer:

	Não e não admite fazer			Não, mas admite fazer			Sim
Assinar petição ou abaixo-assinado							
Participar numa manifestação							
Fazer greve							
Contactar político/governante (rua, carta, mail)							
Votar nas eleições							
Filiar-se num partido politico							
Participar num debate politico							
Ver/ouvir debates/entrevistas politicos							
Escrever uma carta para um jornal							

Indique, se cada uma das seguintes afirmações representa mais uma política de esquerda ou de direita. Indique a sua resposta com uma cruz no quadrado respectivo

A liberdade e a igualdade são importantes, mas se tivesse que escolher entre as duas, escolheria a igualdade, ou seja, que as diferenças entre as classes sociais não sejam tão acentuadas.

Representa posição mais à esquerda | | | | | | | | | Representa posição mais à direita

A competição é uma coisa boa, estimula as pessoas a trabalharem mais e a desenvolverem novas ideias

Representa posição mais à esquerda | | | | | | | | | Representa posição mais à direita

O Estado devia controlar mais as empresas

Representa posição mais à esquerda | | | | | | | | | Representa posição mais à direita

Se as pessoas querem educação deverão trabalhar muito para a conseguir e não esperar que o Estado se encarregue disso

Representa posição mais à esquerda | | | | | | | | | Representa posição mais à direita

O Estado devia ser responsável pelas pensões/reformas de todos

Representa posição mais à esquerda | | | | | | | | | Representa posição mais à direita

Os impostos deveriam ser reduzidos ao mínimo, quer para os cidadãos quer para as empresas privadas.

Representa posição mais à esquerda | | | | | | | | | Representa posição mais à direita

Em política as pessoas falam de esquerda e direita. Como se situaria, quanto às suas posições políticas, nesta escala:

Mais à esquerda | | | | | | | | | Mais à direita

Experiment 1

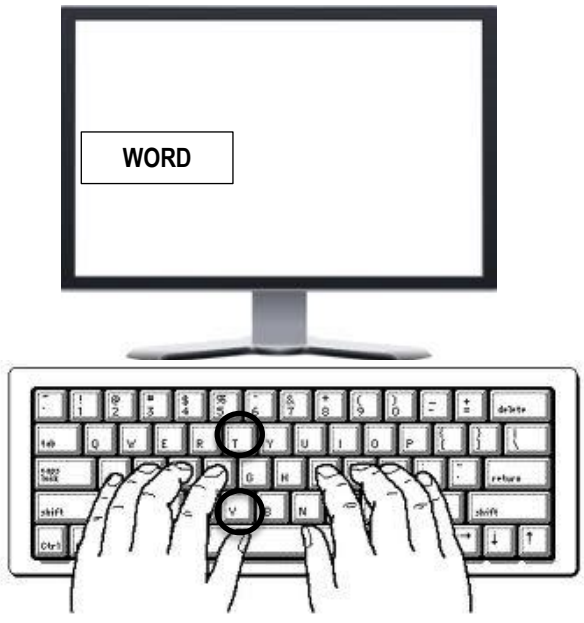
Stimulus materials

Socialism words	*Neutral words*	*Conservatism words*
Comunismo [Communism]	**Sondagem** [Election poll]	**Bolsa de Valores** [Stockmarket]
Manifestação [Demonstration]	**Governo** [Government]	**Colonialismo** [Colonialism]
Proletariado [Proletariat]	**Parlamento** [Parliament]	**Consumismo** [Consumerism]
Greve [Strike]		**Lucro** [Profit]
Sindicato [Union]		**Riqueza** [Wealth]
PCP [Portuguese Communist Party]		**CDS** [Popular Party]
BE [Left Block]		**PSD** [Social Democratic Party]
Jerónimo de Sousa [Leader of PCP]		**Paulo Portas** [Leader of CDS]
Francisco Louçã [Leader of BE]		**Pedro Passos Coelho** [Leader of PSD]

Procedure

A sua tarefa consiste em categorizar palavras indicando se a palavra se associa a ideologias políticas conservadoras ou socialistas. Se achar que a palavra se associa a socialismo [conservadorismo] prima a tecla "T" com o indicador esquerdo [direito] se achar que se associa a conservadorismo [socialismo] prima a tecla "V" com o indicador direito [esquerdo].
[Your task consists of categorizing a set of words, namely by indicating if the word is associated with socialism or conservatism political ideologies. If you think the word is associated with socialism [conservatism] political ideologies press "T" with your left [right] index finger, if you think the word is associated with conservatism [socialism] political ideologies press "V" with your right [left] index finger.]

Condition 1	Socialism "T" left index finger	Conservatism "V" right index finger
Condition 2	Socialism "T" right index finger	Conservatism "V" left index finger
Condition 3	Socialism "V" left index finger	Conservatism "T" right index finger
Condition 4	Socialism "V" right index finger	Conservatism "T" left index finger



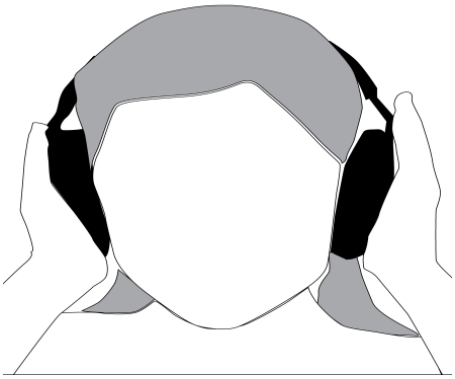
Experiment 2

Stimulus materials

Socialism words	*Conservatism words*	*Neutral words*
Communisme [Communism]	**Aandelenmarkt** [Stockmarket]	**Papier** [Paper]
Staking [Strike]	**Consumentisme** [Consumerism]	**Dóbbelsteen** [Dice]
Revolutie [Revolution]	**Winst** [Profit]	**Beker** [Cup]
Proletariaat [Proletariat]	**Rijkdom** [Wealth]	**Record** [Record]
Demonstratie [Demonstration]	**Kolonialisme** [Colonialism]	**Ring** [Ring]
Vakbond [Union]	**Kapitalisme** [Capitalism]	**Pot** [Pot]

Procedure

Jouw taak is om het geluid dat via de hoofdtelefoon wordt gepresenteerd te classificeren als een woord of een niet-woord door op de bovenste toets van de responsebox te drukken wanneer het een woord is, en op de onderste toets van de responsebox te drukken wanneer het een niet-woord is.
[Your task is to classify if the word that will be presented over headphones is a word or a non-word by pressing the top key of the response box if is a word or bottom key of the response box if is a non-word.] *(counterbalanced*)



APPENDIX C (EXPERIMENTS 2 & 3 – CHAP. 4)

Experiment 2

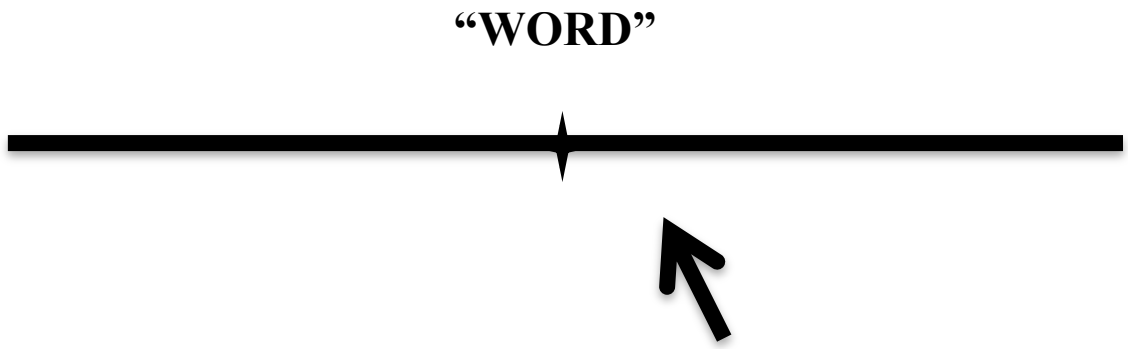
Stimulus materials

Socialism words	*Neutral words*	*Conservatism words*
Comunismo [Communism]	**Parlamento** [Parliament]	**Bolsa** [Stockmarket]
Revolução [Revolution]	**Governo** [Government]	**Consumismo** [Consumerism]
Sindicato [Union]	**Sondagem** [Election poll]	**Lucro** [Profit]
Proletariado [Proletariat]		**Riqueza** [Wealth]
Manifestação [Demonstration]		**Colonialismo** [Colonialism]

Procedure

Por favor, clique na linha com o rato marcando o local onde cada palavra fica melhor.

[Please click on the line with the mouse to mark the position that you think best suites each word.]



Experiment 3

Stimulus materials

Socialism words	*Neutral words*	*Conservatism words*
Comunismo [Communism]	**Parlamento** [Parliament]	**Bolsa** [Stockmarket]
Revolução [Revolution]	**Governo** [Government]	**Consumismo** [Consumerism]
Sindicato [Union]	**Sondagem** [Election poll]	**Lucro** [Profit]
Proletariado [Proletariat]		**Riqueza** [Wealth]
Manifestação [Demonstration]		**Colonialismo** [Colonialism]

Procedure

Irá ouvir através dos auscutadores um conjunto de palavras. A sua tarefa é indicar em que ouvido cada palavra é apresentada mais alta. Se a palavra for apresentada mais alta no ouvido esquerdo deverá premir a tecla "T", se a palavra for apresentada mais alta no ouvido direito deverá primir a tecla "V".
[You will hear a few words presented over headphones. Your task is to indicate on which ear each word was presented more loudly by pressing a response key. If the word sounds louder on your left ear press "T", if the word sounds louder on your right ear press "V". *(counterbalanced)*]