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Dual Identification and Intergroup Relations: The role of superordinate category relevance.

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“Apesar de você

Amanhã há de ser

Outro dia

Inda pago pra ver

O jardim florescer”

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The road to a PhD is a lonely road to a very large extent. Nevertheless there are many people to be thankful to. These include colleagues in the university that played a major role in the development of the research, friends, family and even acquaintances. Doing a PhD in Psychology is more than a job; it is a process of personal growth and most of the people you come across while doing the PhD become part of this process, it is for this reason that they deserve a special gratitude In my case, learning to work in accordance to the standards of science gradually changed the way I thought and how I looked at reality, not only in relation to Psychology, but also in other domains. Thinking and knowing turned into a process of collecting and analysing evidence without losing sight of the margin of error. This implied a change at many levels and also a turn in personal relations; Psychology is after all the science to understand people.

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Resumo

A investigação descrita nesta tese pretende clarificar as condições cognitivas para a existência de duplas identidades. Entende-se por dupla identidade a activação simultânea de dois níveis de auto-categorização social: um nível subordinado e um superordenado. O estudo deste fenómeno é importante porque a dupla identidade foi considerada uma estratégia de redução dapreferência pelo próprio grupo social. A teoria da auto-categorização social assume um antagonismo funcional entre a saliência de duas auto-categorizações. No para a perspectiva da Recategorização social é possível adoptar simultaneamente uma auto-categorizacao supraordenada e uma subordinada. Nesta tese testamos a hipótese de que a comparação entre categoriassubordinadas é o factor que modera os efeitos da dupla identidade. Consideraram-se dois tipos de categorias superordenadas: não-relevantes, aquelas que não servem de suporte às comparações entre categorias subordinadas e relevantes, que são um marco para estas comparações. Desenvolveu-se um paradigma experimental utilizando uma tarefa de decisão lexical em que os tempos de latênciade palavras relacionadas com superordenadas seriam indicadores da possibilidade de utilizar de dupla identidade. Foram realizadas 4 experiencias (N_1=40, N_2=60, N_3=53, N_4=59). Na primeira mediram-se os de latência dos participantes depois de tornar saliente categorização subordinada. Nas restantes manipulou-se adicionalmente a saliência da categorização subordinada de diferentes formas. Nas experiências 3 e 4 manipulou-setambém a comparação entre grupos subordinados. Os resultados mostraram que a saliência do nível subordinado de categorização pode facilitar a saliência do nível superordenado de categorização quando não são feitas comparações; podendo também inibi-la quando há comparação.

Palavras-chave: Saliência; identidade dupla; identidade social; auto-categorização.

Classificação APA:

3000 Psicologia Social

3020 ProcessosGrupais & Interpessoais

3040 Percepção & Cognição Social

Abstract

The research in this thesis intends to clarify the cognitive conditions for dual identities. Dual identities are defined as the simultaneous activation of two social self-categorizations of different levels of abstraction: a subordinate self-category and a superordinate one. Studying this phenomenon is important for social sciences because dual identities are often considered a strategy to reduce the preference for one´s own group. Finding the factors that moderate the effects of dual identities will help in deciding when to use dual identities as bias reduction strategy. Self-categorization theory assumes a functional antagonism between the salience of two nested self-categories which conflicts with dual identities; however from the perspective of recategorization it is possible to adopt a superordinate and a subgroup identity simultaneously. In this thesis we argue that both situations might be possible and that the comparisons between subordinate categories are a moderating factor in dual identities. We consider two types of superordinate categories. Non-relevant are those that do not support comparisons and relevant the ones that are a frame for subcategories comparison. We developed an experimental paradigm with a lexical decision task: response latencies to superordinate self-categorization were considered indicators of the possibility of dual identities. We ran 4 experiments (N_1=40, N_2=60, N_3=53, N_4=59). In the first experiment we measured response latencies of participants after making subgroup identity salient. In the following experiments we additionally manipulated the salience of the lower level of categorization in different manners. In experiments 3 and 4 we manipulated the comparisons as well. Our results shows that the activation of the subordinate level can facilitate the salience of superordinate self-categorization in non-comparison situations; but it can also inhibit it in comparison conditions.

Key-words: Salience; dual identities; social identity; self-categorization.

American Psychological Association (PsycINFO Classification Categories and Codes)

3000 Social Psychology

3020 Group & Interpersonal Processes

3040 Social Perception & Cognition

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General Introduction

One of the most politically relevant questions in the European Union (EU) is whether people can be European citizens without giving up their loyalties as citizens of their member-state nations. The question is not trivial, because legitimacy of democratic European Institutions seems to rely on Europeans' ability and readiness to identify with both: Europe and their nations simultaneously. The possibility for such a dual identification, however, is not something that can be taken for granted, as many political, economic, social and psychological complications have been found (Herrmann, Risse & Brewer, 2004). The research reported in this thesis picks up one specific aspect of the psychological possibility (or impossibility) of dual identities: *Do the principles of self-categorization that are involved in psychological group formation – and thereby in the centre of social identities – pose an obstacle to dual identities, and if they do so – under which conditions?*

The answers to these questions are vital for politics that endorses the co-existence of nested social identities rather than emphasizing a trade-off between them. Twenty-eight countries are currently part of the EU; each having a specific and differentiating national identity. Despite their specificities, these countries form together a political union having common policies and institutions. This configuration of political powers has often been problematic and not consensual among citizens (e.g., a referendum about whether Britain should remain in the European Union will be held on Thursday 23 June 2016). This constellation is even more complicated by the fact that some countries of the EU deal with political issues arising from dissent on the importance of a single national identity as an umbrella of various regional identities (e.g., Spain, United Kingdom, or Belgium).

Overall, in various situations political actors attempt to create a broader social identity containing former ones. Although this strategy has resulted in different developments according to the specificity of each context, they all raise questions about the viability of dual identities, that is, it is not yet clear how simultaneous identification with two identities can contribute to the solution of political problems.

Our first claim is that theories and findings in Social Psychology have an important contribution to make towards the solution of these dilemmas, in particular the ones dealing with changes in social identity. To present those theories we start by introducing the concept

of "social identity". Although many advances have been made since the concept of social identity and its implications were first stated, in order to be able to answer questions about dual identities we have to first introduce the original ideas of social identity. This concept was developed in depth by Tajfel and Turner (1979) to answer the question about how people behave and think in social contexts where they are categorized in groups, such as families and gangs, but also larger groups, such as nations or ethnic groups, or simply people attending a football match, usually polarised in their loyalty towards one of the two teams. Tajfel (1978) defined social identity as the knowledge of belonging to a certain social group with an emotional significance, being this emotional significance as well as the evaluation of the group also part of social identity. Later, Self-categorization theory (SCT, Turner et al., 1987) explained the cognitive basis of group behaviour with two main ideas: the idea of "group" and the idea of "self-categorization". In this theory, social identity is defined as a psychological reality that functions through a process of self-categorization, and it relies on the individual perceptions of being member of a social group. The self-categorization in social identity is conceptualized as part of the self-concept and serves to explain people´s behaviour in groups. Therefore firstly in this introduction we define the concept of "self-categorization" and explain why this concept is important to understand and explain people's behaviour as group members. Secondly, we explain the role of context in self-categorization and connect social identity to "intergroup bias". This subject is important in understanding both the theoretical problem addressed in this thesis and its practical relevance. Thirdly, we examine more precisely about how these connections between self-categorization and intergroup bias have been studied with the purpose of finding a possibility to reduce intergroup discrimination. Fourthly, we describe some contradictory results in these strategies to reduce discrimination and, finally, we show how these empirical difficulties, as well as theoretical contradictions led to the discussion of the cognitive possibility of dual identities.

The idea of "group" is in SCT a social reality as well as a psychological one. In their book, Tuner et al. (1987, p. vii) describe a group as a basic process of social interaction between a collection of people, as well as a psychological shift in the way people operate. Turner et al. (1987) focus on the psychological representation of groups; psychologically a group is a boundary that relates the self to others subjectively. The group is in this sense a cognitive representation that results from a process of categorization of both self and others, hence we will use the terms *social category* and *group* when referring to cognitive representations of groups as the outcome of such self-relevant categorization processes. We

acknowledge however, that in the SCT social groups and social categories are not considered the same thing: social groups are sociological phenomenon, having a social reality outside individual perception (social categories).

The idea of "self-categorization" is one of the cognitive processes that explain how social identity emerges from the notion of being part of social groups. In general, with the term "categorization", we refer to dividing stimuli into groups with similar or equivalent features forming meaningful units. In the process of "social categorization" similarities between people are influenced by individual and social values (Tajfel & Forgas, 2000); similarities are not only perceived but also assumed. A Christian is likely to perceive more differences between German and Turkish than an atheist. "Self-categorization" designates the cognitive grouping of oneself and others in categories that represent the groups in which the self is included (Turner et al., 1987). Self-categorization translates the social reality of groups that have a social reality outside individual cognition to a psychological reality in group members. Perceivers divide their social reality into groups by creating a representation of these groups as cognitive categories. They make the separation between the groups (or self-categories) they belong to: ingroups, and the other groups they can differentiate their ingroups from: outgroups. By distinguishing between the people that are similar to themselves and the ones that are different, perceivers manage to sort the world into a smaller number of meaningful categories (Brewer, 1988), categories that allow perceivers to understand the differences in their environment.

Changes in social identity

Another aspect to take into consideration in an attempt to understand social identity is that, although the term "identity" seems to carry the connotation of continuity that makes identities recognizable, self-categorizations are dynamic and changeable. In different contexts perceivers find different people and will make different distinctions; the process of self-categorization allows considering the social context when making the "self-others distinction" and to use group memberships for an adaptive understanding of its meaning, accordingly. The groups that perceivers take into account in their understanding of themselves and social reality can change from context to context because self-categorization and the categorization of other people are flexible processes. We can observe how this works when we travel and

meet new people; if we are travelling in our own country one useful information is to mention the city or the region where we come from, if we are abroad it is our country or our continent.

The context is fundamental for self-categorization and identity, since categorization is essentially the exercise of splitting the stimuli that are in the same context according to their features. Each context contains different people and information and it is up to the perceiver to find categorizations to make sense of it in the most useful manner. The self-categorizations that perceivers can take from a context can vary in two directions "horizontally" and "vertically". Horizontal categorizations are the various possible differentiations between self and others that the contrasts in the context can provide (ingroups and the corresponding outgroups). Vertical categorizations are the various possible ingroups that the perceived similarities to the self can provide growing in inclusiveness (number of people included in the ingroup; see p. 7).The same person living in Spain can use several vertical self-categories: being from the city of Marbella, being from the region of Málaga, belonging to Andalucía as well as being Spanish.

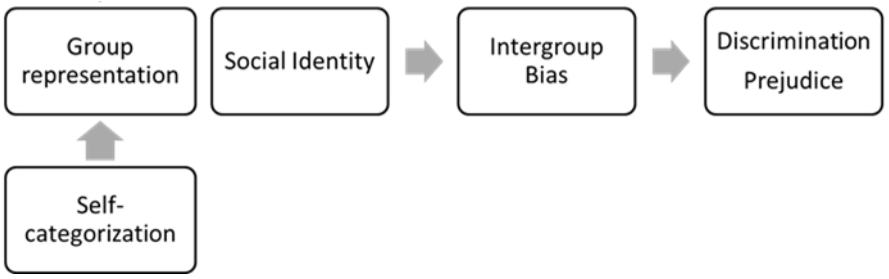
The reason why social identity explains the switch from individuals to group behaviour is because the way that people perceive themselves has an impact on their emotions, motivations and behaviours. Self-perception in terms of social identity makes the individual to act as group member (having emotions, motivations and behaviours as a group member). Some of the most important behaviours of individuals in a group that can be explained by social identity are the ones related to intergroup bias (Tajfel, Billig, Bundy & Flament, 1971) or peoples´ preference for the group in which they are included. These behaviours can be the simplest forms of discrimination and part of what has been discussed as prejudice (All port, 1954; Tajfel et al., 1971).

Examining the possibility of reducing intergroup bias by changing self-categorization

Although intergroup bias does not necessarily follow from social identity (Taljfel & Turner, 1979), studies have supported the assumption that there is a connection between intergroup bias and social identity (Otten & Wentura 1999; Perdue et al. 1990) as well as between social identity, group representation and self-categorization (Tajfel, 1978); so researchers in Social Psychology have been considering the possibility of changing group members' self-categorization to reduce intergroup bias (Crisp & Hewstone, 2007; Gaertner,

Dovidio, Anastasio, Bachman & Rust, 1993; Brewer & Miller, 1984). In their studies, these researchers usually intend to manipulate the self-categorization process and thereby regulate the psychological representation of groups, expecting that this would, in turn, reduce intergroup bias and social discrimination (Figure 1).

Figure 1. General model of the connections between concepts in social identity tradition underlying social psychological approaches to prejudice reduction by change of self-categorization



Being aware of the role of context in self-categorization, researchers considered that one of the simplest forms to manipulate self-categorization should be through changing the context. Evidence showing that self-categorization adapts to the context (e.g., to the change of the comparison outgroup; Oakes, 1994; van Knippenberg et al., 1994) led to the hypothesis that altering the perceived context would work as a path to manipulation of self-categorization, thereby changing the representation of groups and reducing intergroup bias. Some strategies to manipulate the context and alter the self-categorization process were: introducing a new category in the context (e.g., Crossed Categorization strategy; Crisp & Hewstone, 2007); establishing a common or a shared self-category encompassing both members of the ingroup and the outgroup (e.g., the Common Ingroup Identity model; Gaertner, Dovidio, Anastasio, Bachman & Rust, 1993); inducing people to forget about the groups and think of themselves and others as individuals (e.g., the Decategorization Model: Brewer & Miller, 1984). With these strategies researchers tried to move the focus of attention away from the original ingroup-outgroup distinction salient in each context (see Brown & Hewstone, 2005; Dovidio, Gaertner, Hodson, Riek, Johnson & Houlette, 2006) to a different self-categorization and representation of social identity.

One example illustrating these approaches is the European Union that we used at the beginning of this introduction. Based on history or on past experience, we can assume that

most citizens of the EU countries will initially consider their national identities in their encounters with EU citizens from other countries. This salience of national identity might lead to the fast emergence of intergroup bias that can be an obstacle to the good functioning of the European Union (Herrmann, Risse & Brewer, 2004). The same might happen when they arrive to work in European institutions. Institutions can avoid such intergroup bias by applying interventions that are based on one or more of previously mentioned models. Based on the Crossed-Categorization strategy (Deschamps & Doise, 1978; Vanbeselaere, 1987; Crisp & Hewstone, 2007), they can diminish the salience of national identities by directing people´s attention to different categories to which the newcomers also belong, such as being man or a woman or being part of a social class, political fraction or a professional category. The option, proposed by the Common Ingroup Identity Model (Gaertner et al., 1993) is emphasizing the fact that people in the encounter are all members of the larger group of "Europeans", which in fact includes all newcomers of several countries. Finally, following the Decategorization Model (Brewer & Miller, 1984), institutions could frame the situations as something personal between the individuals working together. All these strategies endorse a change of focus away from the original ingroup-outgroup boundaries.

These strategies were often successful in reducing intergroup bias (Crisp & Hewstone, 1999; Mullen, Migdal, & Hewstone, 2001; Urban & Miller, 1998; Gaertner, Dovidio, Nier, Ward, & Banker, 1999; Dovidio et al., 1997; Gaertner, Dovio, & Bachman, 1996; Miller et al., 2006). However, in some occasions, they did not have the intended effect or any effect but the opposite one (Jetten, Spears & Manstead, 1997; Hornsey & Hogg, 2000; Dovidio et al., 1997; Dovidio, Gaertner, Niemann & Snider, 2001), increasing bias. In the particular case of the common ingroup identity, Dovidio, Gaertner, Niemann and Snider (2001) observed increased levels of intergroup bias when they emphasised the common ingroup identity "American" among European American and African Americans. They thought that in this case a common ingroup identity was threatening the ingroup's distinctiveness (reducing the ability of the ingroup to differentiate its members from the outgroup; see Tajfel & Turner, 1979; Brown & Wade, 1987; and Deschamps & Brown 1983;Stephan & Stephan, 1985) and therefore had an aggravating effect on bias.

As a way to avoid such unintended side-effects of common ingroup identities, dual identity has been proposed to reduce intergroup bias in these situations. Dual identity is considered the activation of the self-category at the level of ingroup-outgroup distinction and a common ingroup for the same ingroup and outgroup (Dovidio, Gaertner & Saguy, 2009). A

dual identity is expected to create a bond between the ingroup and the outgroup without threatening the ingroup identity (Gaertner, Rust, Dovidio, Bachman & Anastasio, 1996). This was also suggested by the work of Hornsey and Hogg (2000) that tested the effects of a common ingroup maintaining the ingroup-outgroup division. Based on the multiculturalism approach (see Moghaddam & Solliday, 1991) and SCT, they predicted that a common group avoids intergroup bias if the subgroup identities are at the same time preserved. Subgroup identities are essential sources of information in the context they emerge because they describe identities and prescribe behaviours therefore they might be difficult to replace or supress. In their experiments Hornsey and Hogg (2000) emphasized either: a real subgroup, a real superordinate category or both and observed that intergroup bias was reduced in this last case.

However, while dual identity had the predicted effects in some contexts (Gaertner, Rust, Dovidio, Bachman & Anastasio, 1996; González & Brown, 2003; 2006), data collected to test the effects of dual identities also show that this strategy was not always successful in reducing bias (Banker & Gaertner, 1998; Anastasio, Bachman, Gaertner & Dovidio, 1996). In the end dual identities - as it occurred with common identities - could either decrease or increase intergroup bias. For example, if we think about football fans: within their country they follow quite closely one single team, remaining loyal to this team regardless of their victories or defeats and usually dislike fans of other teams. When the national team is playing they become closer to other fans, cheering the national team together. But this is not a permanent state, this understanding will only last until the moment that the affiliations of the different football players in the national team are made salient; then they will start supporting more strongly the players of their team and blame the others for any misfortune. Despite the short-comings of dual identities, they still appear in many different social contexts (e.g., students of management that are also students of ISCTE; supporters of Benfica football team that are football fans) hence they remain being an important research topic in social psychology. Because dual identities can be easily be created, but can also lead to very different outcomes, it is important to understand in which circumstance they will work in one positive or negative direction with regard to intergroup bias.

Moderators of the effects of dual identities

In response to the inconsistent results on re-categorization effects, there has been some interest in finding out the right moderators for the effect of common ingroup identity and the dual identity on intergroup bias, that is variables that determine whether common ingroup identity and dual identity reduce or increase bias. Moreover, this inconsistency also fostered discussions about the cognitive mechanisms underlying the two strategies and the re-examination of models predicting that common identities and dual identities increase intergroup bias (e.g., Mutual Ingroup Differentiation Model, Hewstone, 1996; Hewstone & Brown, 1986; Ingroup Projection Model; Mummendey & Wenzel, 1999) (Dovidio, Gaertner, Hodson, Riek, Johnson, & Houlette, 2006; Dovidio, Gaertner, & Saguy, 2008).

Our project adds to the discussion by elaborating the cognitive possibility and implications of dual identities, something that has not yet been done so far but will, we hope, help to clarify the cognitive dynamics involved in the complex effects of dual identity interventions. That is, in this thesis we will discuss the cognitive mechanisms underlying dual identities. We define dual identities as the *simultaneous salience of two self-categories, at two different levels of inclusiveness*. With *salience* we mean that the perceiver uses the two self-categories in her/his self-representation and is therefore inclined to use them in the interpretation of social situations, social judgments and in the selection and exercise of actions. With *two levels of inclusiveness* we refer to the fact that one of the two self-categories in the dual identity stems from the ingroup-outgroup differentiation whereas the other one has a larger scope and includes both the ingroup and the outgroup (superordinate self-category; vertical categorization, see p. 3).

The notion of dual identity that is in the core of the argument of this thesis is based on the hierarchical organization of the Self, proposed in SCT, which assumes that *"...self-categorizations exist as part of a hierarchical system of classification. They form at different levels of abstraction related by means of class inclusion."* (Turner et al., 1987, p. 45). For SCT, the salience of self-categories within such hierarchical classification of self-categories is driven by social comparisons: By making comparisons between social stimuli in a larger frame of reference, social perceivers rely on those self-categories that provide a meaningful interpretation of the situation, and which therefore become salient. Importantly, these comparisons are only possible to the extent that those stimuli that are categorized as belonging to distinctive categories share a common aspect (Oakes, 1987). As much as apples

and oranges are only comparable in the sense that they are two different types of fruits, the distinction between ingroup and outgroup is only meaningful if these two groups share some membership in a larger, superordinate category (Barsalou & Medin, 1986; Medin & Wattenmaker, 1987; Murphy & Medin, 1985).

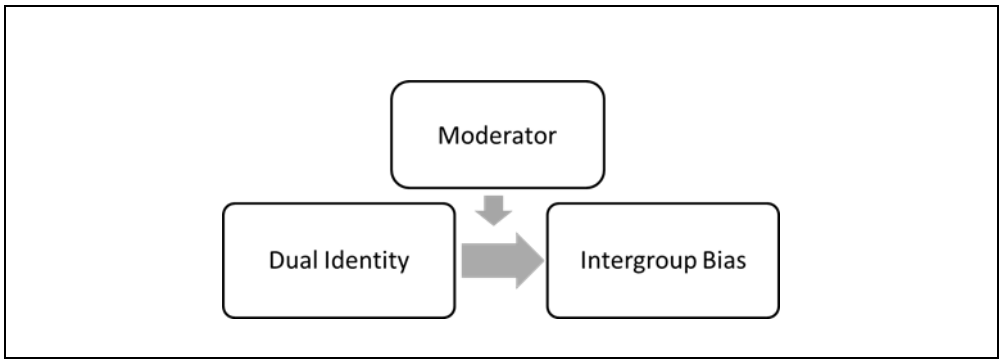
That is, according to SCT, to be compared, stimuli have to have been already categorized as identical on a higher order level of abstraction (superordinate categories; Turner et al., 1987, p. 46, Assumption 7). Important for the central hypothesis of this thesis is that such higher order classification, aside from providing the frame of reference for ingroup-outgroup comparisons, may (or may not) form the second layer of social identity that is involved in dual identity besides the original ingroup/outgroup distinction. The implications of this double function of higher superordinate categories have not yet been elaborated sufficiently, nor have they ever been studied empirically in terms of their impact on the salience of dual identities. The current research intends to fill this gap.

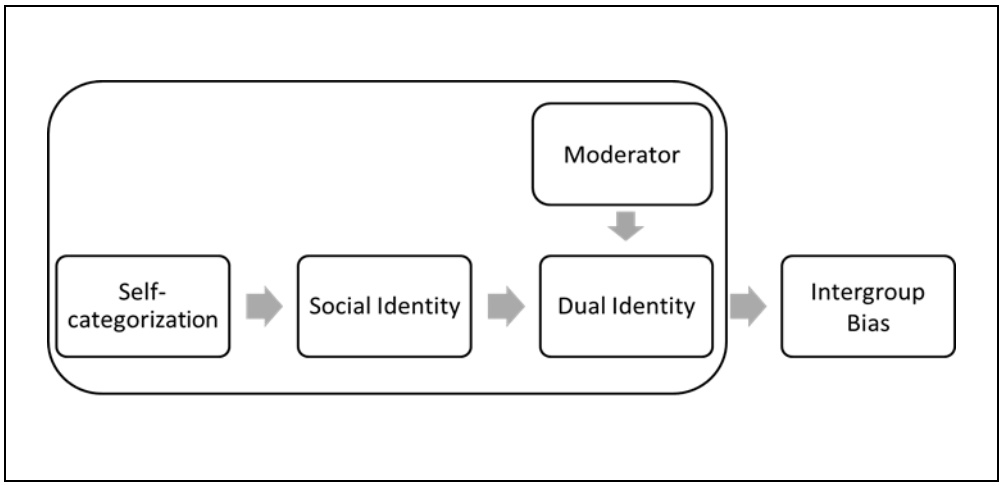
The current research

Going back to the contrasting effects of dual identities, we think that one of the moderators determining these effects on intergroup bias can be found in the cognitive processes underlying dual identities. The simultaneous salience of two self-categories is not a straightforward process, there are different cognitive processes occurring when a self-category is activated that can allow or block that two self-categories become at the same time salient to generate a dual identity. For instance, the accentuation of differences between the ingroup and the outgroup in a subgroup categorization might interfere with the accentuation of similarities implied by the common categorization (see Doise, 1978); or the salience of the subordinate ingroup might lead to ethnocentric representations of the superordinate level (see Mummendey & Wenzel, 1999). In several studies researchers were able to activate two self-categories with their experimental manipulations (e.g., Hornsey & Hogg, 2000; Gaertner & Dovidio, 2000; Devos & Banaji, 2005, Machunsky & Meiser, 2009; Bianchi, Mummendey, Steffens & Yzerbyt, 2010). But other research reports difficulties in activating simultaneously two self-categories. Indeed in the research of Macrae, Bodenhausen and Milne (1995) participants primed with one categorization criterion were unable to use a second criterion in judging a social target. Mlicki and Ellemers (1996) also found that participants could only use one self-categorization level at a time, European or Dutch.

In this project we investigate these underlying processes to understand when it is possible to build a dual identity from two self-categories. This is important because we believe that it is the cognitive possibility or impossibility of dual identities that partially explain their contradictory effects in intergroup bias. The variations in the cognitive processes of social identity are what make dual identities cognitively possible or impossible, and it is reasonable to think that dual identities have the proposed positive impact of reducing intergroup bias only to the degree that they are cognitively possible(see Figure 2). Other authors have explored different moderators that could account for the opposite effects of dual identities on intergroup bias (e.g., differences of status between social groups; Dovidio, Gaertner & Kafati, 2000; Guerra, Rebelo & Monteiro, 2005) nevertheless results remained inconclusive, additional research is still required and our research might bring valuable information about this moderated relation. But although our research is motivated by this larger question, in the current project we do not test the moderation of the effects of dual identities on intergroup bias by these cognitive processes; we limit ourselves to contribute with a first step that is necessary in advance, namely by trying to capture experimentally the cognitive dynamics of dual identities. Thus in our research designs, the salience of dual identities is the dependent rather than the independent variable (see Figure 3). Later on, we will explain why this research might nevertheless contribute to the theorizing on moderators of dual identity effects.

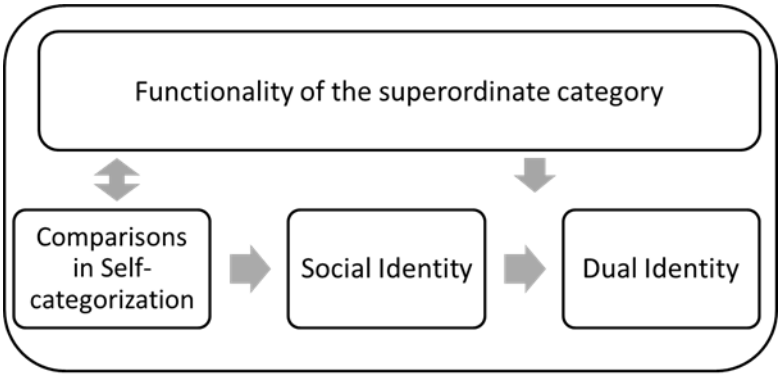
Figure 2: Basic and extended models of the relationship between dual identity and intergroup bias





The key idea of the current research about the cognitive dynamics of dual identity is the following: the possibility of dual identities is dependent on the cognitive processes in social identity. Whether the superordinate category is important for the differentiation of the self-group or ingroup from the outgroup changes these cognitive processes. Here, the term *cognitive processes* refers to the processes of comparison that occur when a self-category is activated and to the blocking or facilitation of dual identities (salience of two self-categories; see page 8). The *differences in the functionality of superordinate categories* relate these two cognitive processes (comparison and blocking/facilitation of dual identities). When we talk about "differences in functionality" we refer to the fact that the superordinate category might serve as frame for the comparisons that differentiate ingroup from outgroup (e.g., German as superordinate category is part of the definition of West-German and East-German). In these cases the comparisons that differentiate ingroup from outgroup occur at the level of the superordinate category (Turner et al., 1987, Assumption 7.2., p.48). Our hypothesis is that if comparisons are taking place at the level of the superordinate category, then the activation of this superordinate category as a part of a dual identity is likely to be blocked.

Figure 3. Representation of the cognitive processes in dual identities



To illustrate this situation we can start by thinking about the groups "White" and "Black" that are differentiated in terms of skin colour. In the context of a multi-ethnic high school, the superordinate category "School" or "Team" (Gartner, Dovidio & Bachman, 1996) includes the ingroup (students with the same skin colour) and the outgroup (student with different skin colour) but is not related to the criterion "skin colour" that differentiates Whites from Blacks. This superordinate category does not relate to the differentiation between the "White" and "Black" which is based in the "skin colour" but is rather neutral in that respect. The dimension "skin colour" is not salient or in use in this superordinate category. If we were able to look at the "school" as superordinate category we do not immediately see "White" and "Black" differences. That perception changes if the superordinate category supports the comparisons between groups as the superordinate category "American". "White" and "Black" are included in this superordinate category and the dimension "skin colour" is highly related with the meaning of this superordinate category. Often "White" and "Black" are compared as Americans in the US, which is also reflected in the way they have been labelled: "European-American" and "African-American". The dimension "skin colour" seems to be particularly salient in "American". According to Devos and Banaji (2005) Americans are stereotypically White. Therefore, in the definition of "American" the colour of the skin plays an important role. "American" as superordinate category is likely to be used to compare and define the differences between "White" and "Black".

Superordinate categories: relevant and non-relevant for intergroup comparisons

In line with terminology used in previous research, we will refer in the following text to these two situations as the superordinate categories being "*non-relevant for intergroup comparison*", as in the case of "School" or "Team" and "*relevant for intergroup comparisons*" as in "American" (Dovidio, Gaertner & Saguy, 2007; Hall & Crisp, 2005; Meiser, Mummendey & Waldzus, 2004; Wenzel, Mummendey, & Waldzus, 2007). Non-relevant superordinate categories are the ones in which the criterion that differentiates the subgroups is not semantically related or is not part of the definition of this self-category. Relevant superordinate categories are the ones in which the criterion that differentiates the subgroups is central to the definition of the self-category. At the level of the processes in the cognitive dynamics of self-categories, relevant superordinate categories are usually a source of meaningful dimensions of comparison between ingroup and outgroup so the superordinate category can function as a comparison background; non-relevant superordinate categories do not have this role.

To better understand this difference we have to look closer into the process of self-categorization and go back to the hierarchical system of classification described in page 8 of this introduction. Going in parallel with the description of natural categories (Rosch, 1978), SCT explains self-categorization as the process of searching for differences and similarities between the Self and others in a specific context, and give it a meaning. If we do not find similarities between stimuli we cannot compare them to find differences. As mentioned in page 8, we have to find a common context between two stimuli to be able to see which are their differences regarding this common context (Barsalou & Medin, 1986; Medin & Wattenmaker, 1987; Murphy & Medin, 1985). A relevant superordinate category will reflect this common context. The differences we can find in a context decide the identity (identities in the case of dual identities) we will use, "self-categorization is (…) determined by comparative relations within a given context" (Oakes, 1996, p. 10). That is, looking for similarities and differences in social contexts is important in the activation of self-categorizations hence we can use different identities in different contexts according to the comparisons we make (other factors involved in self-categories activation are described in Chapter 2). Based on the comparisons we have made against the backdrop of a common context a self-category will become available[1].

[1] This is both, a bottom-up and top-down process. That is, on the one hand the identification of differences determines the use of a category, but once the category is used, also the perception of

One example of how the comparative relations in a context determine our self-categorizations is for instance being in a waiting room of a doctor´s appointment. In that situation we share with a couple of people a common context of being patients waiting in a room of a doctor´s appointment. We might notice similarities and differences between people in the room to sort them according to the doctor they are visiting (either the same as ourselves or different). We might notice for instance the glasses they are wearing and decide that they are visiting the ophthalmologist; or that they are pregnant and they are visiting a gynaecologist. With these comparisons we create a hierarchical system with the context of being a patient in the waiting room as superordinate category and the sort of medical-specialist patients are visiting as subcategories. We use the superordinate category of patients in a waiting room as context to compare the people and define self-categories, differentiate the ingroup from the outgroup.

If we take this example to understand the difference between *"comparison non-relevant"* and *"comparison relevant"* superordinate categorizations: "patients in the waiting room waiting for a doctor" corresponds to a relevant superordinate category because it contains the criterion in which we are comparing inside the room; differently self-categorizations as "grown up people", "people living in a certain country or city" are contexts or superordinate categories that bring these same people together, but they might not be relevant for the comparison between the groups we created, as they do not differentiate people according to the kind of doctors they are waiting for.

We propose that it is this difference regarding the differentiation between ingroup and outgroup between the "comparison non-relevant" and "comparison relevant" character of the superordinate category what determines if dual identities will in certain situations be established. We predict that a superordinate category "A" that is relevant for the comparisons between the ingroup and the outgroup cannot be used in dual identity. Conversely, if the used superordinate category "B" is not relevant for the comparisons between the ingroup and the outgroup dual identity will be possible. Our explanation of why we think that the superordinate categories that are relevant for these comparisons cannot be used as self-categories simultaneously is based on the self-categorization principles described in the SCT. SCT assumes that self-categorizations occur in "*functional antagonism"* (Turner et al., 1986,

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inter-category differences is accentuated and the self-category is reified. That does not mean that the process is always initiated by the identification of differences, but it can also be initiated by the motivated use of a category which then is or is not confirmed by the encounter of differences in the stimulus configuration. However, for the sake of simplicity, in this chapter we stick to the case of emergent group formation, that is, when the perception of differences comes first.

p. 49), the salience of one level of self-categorization inhibits the salience of the alternative levels within the same hierarchical structure.

SCT goes a little further in the explanation why this simultaneous salience is not possible: the salience of a self-categorization at one level, i.e. ingroup *"enhances the perception of identity between members of the same category, and of differentiation with members of other categories…"discounting"…the similarities between classes that exist at a higher level"*(Turner et al., 1986, p. 49). Hence, once the ingroup is active, activating a superordinate category that is connected to the similarities at a higher level of categorization or the common context against which the ingroup and the outgroup where compared (i.e. relevant for comparisons), is cognitively hard. These two levels of self-categorization involve opposite cognitive processes. The same should not happen to a superordinate category that is not relevant for the ingroup and outgroup comparisons; the similarities that may exist between ingroup and outgroup are not discounted.

In the current research we try to capture the distinction between comparison relevant and comparison non-relevant superordinate categories experimentally. We operationalise the self-categorization principles in terms of cognitive connections and processes and explore the idea that the various levels of self-categorization organise in a cognitive network (e.g., Smith, Coats & Wallin, 1999). A cognitive network is a model for representing the knowledge in human memory that describes how the aspects of a certain concept are organised and accessed. It assumes that the representations of physical objects (e.g., bread and butter) are associated in memory. These associations are also found between the representation of social objects (e.g., American and White, Devos & Banaji, 2005; e.g., ingroup traits and superordinate categories, Machunsky &Meiser, 2009 and Biachi, Mummendey, Steffens & Yzerbyt 2010). We hypothesise that ingroups and superordinate categories are part of the same network and due to the cognitive associations between them the use of one ingroup will affect the use of the associated superordinate category (e.g., spread of activation; Collins & Loftus, 1975). When perceivers in the process of self-categorization engage in comparisons between ingroup and outgroup against a common context, these comparisons will eventually be an obstacle for the activation of the relevant superordinate category, the higher level of categorization that supports these comparisons.

Outline of the thesis

The models, processes and hypotheses pointed out throughout this Introduction are developed in this thesis in 5 chapters. In the following three chapters we will describe the relevant theoretical approaches in a more detailed and systematized manner. In Chapter I, we reviewed the essential ideas and assumptions of Self-Categorization Theory (SCT; Turner, Hoggs, Oakes, Reicher & Wetherell, 1987). We explained the cognitive representation of groups based on self-categorization. In Chapter II, we describe the processes underlying the use and formation of social categories. We look at different possibilities to explain the "salience" of categories, giving a special emphasis to "activation", "meta-contrast" and "comparison", the last two as the processes central in SCT. In Chapter III, we take these ideas one step further and discuss the possibility of dual identities and multiples self-categories. Theories about having more than one identity "salient" are in essence extensions of SCT even though they contradict the assumption of functional antagonism between self-categorization levels. To explain how multiple-identities may function we resort to other cognitive views on categorization and the organization and use of information in memory. We define multiple identities in terms of the cognitive processes involved and check if they could theoretically actually fit and complement the principle of functional antagonism. Also in Chapter III, we look at the different configurations of dual identity as a way to explain the empirical inconsistency between the models framing dual identities as a moderator in the regulation of the relations between social groups, the Common Ingroup Identity Model (CIIM) and the ingroup projection model. We debate the idea that just some configurations allow intergroup comparisons which in turn are linked to different cognitive processes in dual identities explaining the opposite effects of dual identities predicted by the two models.

At the end of Chapter III, we proceed with our research hypothesis about the functionality of superordinate categories, intergroup comparisons and the consequent cognitive processes in dual identities. With them, we propose to resolve the theoretical inconsistency between holding a dual identity and the assumption of functional antagonism between categorization levels of SCT. In Chapter IV we start by presenting the rational of our four experiments including a methodological note on the procedures that are applied to study automatic processes in cognition. Four experiments are then explained in details with results and conclusions. In each of the experiments we attempted to activate a self-category and measured the activation of superordinate categories, acting on intergroup comparison processes in different manners in each study. With each study we advanced step by step in

improving the way we treated the cognitive processes in dual identities. Experiment 1 is our initial experiment and served as the basis to advance afterwards into more sophisticated follow up designs. In all experiments we used a lexical decision task (LDT; Wittenbrink, Judd & Park, 1997) to measure the salience of the higher level self-categories, based on results of a pre-study to create proper stimulus-material. In Experiment 2, we integrated in the design a semantic priming paradigm to vary the activation of the first level of self-categorization experimentally. In Experiment 3, we integrated a mindset priming to manipulate the degree to which participants engage in intergroup comparisons. Finally, in Experiment 4 we brought the two strategies used in Experiments 2 and 3 together into a joint design coupling semantic priming with mindset priming to ensure that we were in control of the activation of self-categories and of the intergroup comparison processes.

We conclude by compiling and discussing all results and ideas of the different experiments with a conclusion and a general discussion in Chapter V. We elaborate on the connections between the experimental conditions in our research and the possibility of dual identities in the face of evidence for functional antagonism. Finally with that information we discuss the advantages of considering the relation between the categories before proposing the use of a dual identity as a buffer for intergroup bias and the impact of dual identities in natural contexts.

CHAPTER I

Self-Categorization

In this chapter we provide some more extended information about SCT. We offer a description of the essential points of the theory that are the basis of our research hypothesis. First we present these points by differentiating self-categorization from social identity and from social categorization, while we contrast the contributions of SCT and Social Identity Theory (SIT; Tajfel & Turner, 1979) to the definitions of these concepts. Secondly we explain in more details how self-categorization connects social identity to social groups in two steps, through *comparison* and *depersonalization*. Finally in the end of this chapter we will describe two direct cognitive effects of the categorization process: accentuation of intra-class similarities and of inter-class differences; which are two crucial ideas in order to understand functional antagonism and the discussion on dual identities.

Going through these ideas in SCT is important for the purpose of this research and only with this knowledge we can understand the theories on dual identities in Chapter 3: their formation, representation and functioning.

Social Identity and Self-categorization

In the introduction of this thesis we stated that through the concepts of social identity and self-categorization Tajfel and Turner (1979) and Turner et al. (1987) explained how people change from functioning as separate individuals to functioning as social group; that is, the same people have a different behaviour and a different mindset when they are in a group setting than when they are in an interpersonal setting. As we stated earlier (pp. 1-2) social identity is a psychological reality that functions through a process of self-categorization; and the process of self-categorization is the cognitive grouping of oneself and others in categories that represent the groups in which the self is included (Turner et al., 1987).

SCT shows that the principles and processes of group behaviour rely on the relationship of the individual to the social group. This relationship is achieved through self-categorization and social identity: they establish the connection between the group and the individual's representations. We can understand this connection in two senses: (1) between the group as a social reality outside (i.e. social group) and the individual representation that

group members have of this social group, (2) between the individual or personal level and the group level of self-perception. That is, self-categorization links the self-representation of the perceiver to social reality, (the groups of stimuli in the social context, i.e. social groups), and social identity brings this "social self-representation" in contact with the personal representation of the perceiver since social identity is part of the self-concept.

It is important to notice that SIT (Tajfel & Turner, 1979) and SCT are related theories, however these two theories have differences at the level of concepts and processes that we should take into account. In SIT (Tajfel & Turner, 1979) social identity defines a psychological "position" that makes the individual to behave as a member of a social group in relationship with other social groups (intergroup), in particular, though not only, the behaviour of favouring the ingroup; in contrast to behaving as an individual in relationship with other individuals (interpersonal). For this reason, SIT was also called "*Social identity theory of intergroup behaviour"* (Turner et al., 1987, p 42). The connection between the individual and group positions is conceptualised as a "psychological continuum" between "interpersonal and intergroup" levels of identity.

But apart from a cognitive component, social identity has an emotional and evaluative component as well. The cognitive component of social identity is the perception or belief of being a member of a social group and is achieved through self-categorization; the emotional-evaluative component is linked to self-evaluation. Usually people are motivated to achieve or maintain a positive self-evaluation, which in terms of social identity is achieved through avoiding the negative and approaching positive evaluations of the ingroup, for instance by favouring the ingroup compared to relevant comparison outgroups. This means that social identity provides the individual with a self-definition and positive self-value through its cognitive and emotional components. The positive self-value is particularly important for SIT because it explains the tendency to favour the ingroup which is key to understanding social change and stability; in a social situation the positive self-value is achieved through the positive evaluation of the ingroup. SCT on the other hand deals mainly with the cognitive component, the "psychological formation" of groups (Turner et al., 1987, Preface).

SCT is a *Social identity theory of group formation* (Turner et al., 1987, Preface). In SCT the role of self-categorization is emphasized to explain group behaviour in a broader manner; it aims at responding to the question of why people involved in a situation in which two groups were differentiated behave as group members rather than as individuals (Turner et

al., 1987; Turner & Reynolds, 2001). In contrast to the SIT, that gives a more motivational explanation of behaviour as a group or intergroup behaviour (through "self-value"), SCT wants to explain the various forms of group behaviour (e.g., social influence, cohesiveness, etc.) by establishing the cognitive principles of psychological group formation. More emphasis is given in this theory to the self-categorization process.

Categorization, Social categorization and Self-categorization

The idea of social and self-categorization was inspired by categorization theorists (e.g., Bruner, 1957; Allport, 1954; Campbel, 1958; Rosch, 1978). Social categorization is in general terms an application of the concept of categorization to social contexts (Tajfel and Turner; 1979): because people have the tendency to think categorically, they will apply the same processes and arrange social reality categorically in the same manner as other types of information (e.g., Tajfel, 1969; Taylor, Fiske, Etcoff & Ruderman, 1978; Fiske & Neuberg, 1990; Macrae & Bodenhausen, 2000; Oakes & Turner, 1990). Thinking categorically means to look for meaningful similarities and differences between objects in order to bring them together according to these similarities and separate them from others according to their differences (Tversky & Gati, 1978). Categories group together a number of objects that are considered to be equivalent (e.g., they have the same function, or share several features; Rosch, 1976). Categories have the function of reducing the complexity of the world by organizing it and giving it a meaning (Bruner, 1957); the meaning of the objects in the same category is considered to be equivalent. One important point about "simplification" or "complexity reduction" in categorization is that it does not mean that the perceiver is minimizing the information about the object. In fact, when an object is included in a category the meaning associated with the category is attributed to the object, so the information about it is extended (Macrae, 1999; Oakes, 1996). By "simplification" or "complexity reduction" the information in the context is not arbitrarily perceived, it is selected and organized in accordance to the information already held by the perceiver. The perceiver simplifies, organizes and gives meaning to its environment in order to make most of the information available (*"provide maximum information with the minimum cognitive effort"*; Rosch, 1978, p.252).

Indeed categories are not formed on the basis of arbitrarily selected similarities: different attributes of the objects are noticed in different situations (Mervis & Rosch, 1981). It

results from this process of comparing objects that the different categories in use will be in line with what is around the object in a certain moment (context). Furthermore objects are compared according toa certain attribute or criterion, which is more salient in a context (either for perceptual or cultural reasons), therefore all entities compared have a certain degree of resemblance: those categorized in the same category have a higher degree of resemblance than those in different categories. Within a context there will be different degrees of resemblance or equivalence between objects, so objects and categories will be hierarchically organized depending on their similarities (Rosch & Mervis, 1975). This implies a spectrum of degrees of abstraction between categories and objects in a context: two objects or categories are differentiated (low resemblance) when they stay at the same level of abstraction, but they become similar (high resemblance) at the next higher level of abstraction. A clear example is the one used by Rosch (1978): the categories "chairs" and "tables" are clearly distinguished at a lower level of abstraction; nevertheless they are equivalent if the category "furniture" at a higher level of abstraction is considered. To talk about these two sorts of relationships between objects and categories Rosch (1978) indicates that when "chairs" and "tables" are differentiated they are perceived at the same one level of abstraction (horizontal dimension); they are equivalent when they are perceived as included in the following higher level of abstraction, they are both furniture (vertical dimension). Degrees of resemblance and criteria of comparison change according to context.

In social categorization we can find very similar ideas that follow from applying the principles of categorization to explain social reality, (1) that the cognitive functions and processes of natural categories can also be ascribed to social categories; e.g., simplification of reality (Tajfel, 1969) and attribution of meaning to stimuli (Tajfel, 1972; Tajfel &Turner, 1986; Turner, 1985; Oakes, 1996); (2) that social categories will change in different contexts and will have different levels of abstraction (Rosch, 1978).

(1) Self-categorization is in the SCT and the SIT the cognitive process to form social categories. This process is an extension of categorization and social categorization with an emphasis on the self and it organizes reality using the self as reference. Social categories are, as natural categories, also formed by comparison, by considering the similarities and differences between the perceiver's self-categorizations, ingroups, and other social categories, outgroups. Through this process the self finds a self-definition and a meaning in each social context; knowing to whom one is equivalent and the attributes of one´s categories. For SIT it is also important that the reference to the self and the comparisons with the outgroup provide

individuals with self-value (by favouring the self-category or ingroup; see p. 19). However what is more central in SCT is that self-categories have a self-definition function since authors explain changes from interpersonal to intergroup behaviour through changes in self-definitions. In fact Turner et al. (1987) assume that one central part of the self is a large cognitive structure with several self-categorizations (Assumptions 2 and 3; Turner, 1987, p. 44).

We can find examples of how important social categories are to provide meaning and self-definition in the way people describe themselves. In social networks such as twitter most self-descriptions are based on social categories, for instance, "Driver, Hiker, Coach, Positive Life Pursuer, Dreamer & Pragmatist" (Candice Lau, January 2015).

(2) Self-categorizations are also diverse and vary in level of abstraction (Turner, 1987) and allow adapting to the context. It follows from (1) that self-categories will vary: if self-categorization depends on the comparison with what is around the perceiver in a certain moment, and if it provides meaning to the self in all sorts of contexts, then self-categorization has to be a flexible process. We see that individuals live with different people in different contexts (with colleagues at work, with family at home, etc.) and that they hold different self-categorization in all these different contexts. This categorical and hierarchical arrangement of social identity in SCT gives a more comprehensive explanation of the change from a personal to a group behaviour.

Using the terminology in Rosch (1978), the process of self-categorization can generate categories that vary at two levels: horizontal and vertical. As is the case for physical objects, the degrees of equivalence between self-categories and related social categories (outgroups) will also result in hierarchical organizing. Social categories vary at the vertical dimension, that is, they differ in the level of abstraction, going from personal to a social level (Assumptions 5 and 6; Turner, 1987, p. 45). Turner et al. (1987) assumes that there will be at least three levels of abstraction in self-categorization: personal, social and human (Assumption 6, p.45). Therefore each self-category includes and is included in another more abstract self-category. Social categories can also vary at the same level of abstraction on a horizontal dimension (e.g., Woman and Man) and several self-categories can have the same level of abstraction but applicable to different contexts (e.g., Woman, Muslim, see Chapter 3).

A good example to understand the "vertical variation" of self-categories and their hierarchical organization is in the well-known citation of Socrates: *"I am not an Athenian or*

a Greek, but a citizen of the world" (Plutharch, 1898). Socrates defines himself with three categories, these are part of his identity and he would probably change from one to the other in different cases. These three categorizations are not random, they fit one another. This means that they go from a lower to a higher level of abstraction: the category "Athenian" includes Socrates and the group of people living in Athens; the following category "Greek" also includes Socrates and all other Athenian but also all the groups of people in Greece; similarly the last category "citizen of the world" includes what all the prior categories included (Socrates, Athenian and Greek), as well as all other people from different parts of the world.

The process of Self-categorization: comparison and depersonalization

As we said, this diversity in self-categories suggests that self-categorization is a flexible process as it can create many different self-categories on a vertical dimension (from a lower to higher degree of abstraction) and on a horizontal dimension (e.g., at the same level of abstraction as in multiple categorization, see Chapter 3). SCT provides an explanation of the steps in this process that allows such flexibility. The basic idea is that by comparison self-categorization adjusts the self-definition to the context. The precise way in which this process works, so that people use one self-category or another, is described in more detail in SCT's Assumptions 7 to 9.

Turner et al. (1987) start by explaining that self-categories "form" or become "salient" (p. 46) through comparisons. It is important to underline that to use self-categories already formed or to form new ones the same basic process is applied: comparison. The specific conditions of these comparisons are also defined: categories or stimuli are compared and seen as different because they have been categorized as equivalent at a higher level of abstraction. These categories and stimuli differ in the value they have on that one or more shared dimensions that are defined on this higher level of abstraction, either quantitatively or qualitatively (e.g., there are people that are European, some are British-European, others are German-European; there are young people, some are younger, children, other are less young, teenagers).To understand this relationship between categories it is important to remember the hierarchical relations between categories proposed by Rosch (1978) and Turner (1987). It is also useful to consider that the more abstract level of categorization reflects the attributes

perceived in people and categories, that is, the attributes in which the categories at a lower level were differentiated (e.g., attribute young; see Rosch, 1987).

In this aspect we find again differences between concepts in SIT and SCT. In terms of SIT, comparison is the way of contrasting the value of the ingroup to the value of the outgroup. In SCT the explanatory role of the comparison process is taken further and extended.

According to SCT, forming a category involves 3 forms of comparison. Perceivers will start by picking one of the possible criteria in which people in a context are different, then they will create categories accordingly and (a) compare people in the same category, checking the remaining differences between them. (b) They will also compare people inside the category with people of different categories and (c)observe if the differences that still exist between people in the same category after categorization are smaller than the differences they have with people in the different categories. Only if the differences between people in a category are smaller than their differences with others (not in the category), it is worth it to form a category. Based on Campbell (1958), Turner et al. (1987) explains that for this last comparison perceivers people rely on proportions that can be described by calculating an arithmetical ratio between the two types of differences obtained, i.e. (c)=[(b)/(a)]. This ratio is a "meta-contrast ratio", as it compares two contrasts or comparisons. Type (a) comparisons are referred to in Turner et al. (1987) as intra-class comparisons and type (b) as inter-class comparisons. In situations in which several categorizations are possible, and given that all other factors are kept equal, categorizations with a higher meta-contrast ratio are more likely to become salient than those with lower meta-contrast ratio.

All these comparisons are an important part of how the self-categorization process grounds self-categorization on reality. Groups are not arbitrarily invented; psychological group formation is based on the stimuli available. In principle groups have a reality outside individual perception and bring together several people with the same identity, the perception of similarities and differences between the stimuli in social groups provides social groups with a cognitive background. Based on comparison, self-categorization allows people to see which groups can be present in a situation and select the ones that fit the situation the best. However this process of psychological group formation does not work the same way for all groups. For some social groups the psychological formation is not so much based on the calculation of meta-contrast but rather on culturally learned differences. Nevertheless, the

configuration of group identity is equally based on intra-class similarities and inter-class differences, only that these similarities and differences do not emerge out of the perception of stimuli in the here and now, but rather out of culturally learned stereotype knowledge.

The perception of intra-class similarities and inter-class differences is indeed central in self-categorization. Once categories are formed the perception of intra-class similarities and inter-class differences is accentuated (Assumption 8; Turner et al. 1987; p. 49). Therefore the terms of the meta-contrast become more extreme so the value of the ratio is higher. Such accentuation makes the division between categories clearer and consequently also the categories formed. The perception of the categories formed becomes even more meaningful in that context since the differences between people in the same category are disregarded whereas their differences with people in other categories are reinforced. Ingroup-outgroup categorization is by this means enhanced. This accentuation effect is important to explain further effects of self-categorization as well as to explain categorization not as category formation but as the process of category use or activation that will be described in Chapter 2 in more detail.

One of the effects of accentuation of intra-class similarities is "depersonalization" (Hypothesis 2; Turner et al., 1987, p. 50). Since intra-class similarities are maximised, people that perceive to be member of a category will see themselves as interchangeable with other group members of this category in the characteristics that define it. As a consequence, depersonalization is the second step after comparison on how self-categorization connects social identity to social groups; it explains the change from an individual to a group mindset: since people come to see less of their specific personal characteristics and perceive themselves rather as interchangeable group members, social identity gains a major role in the behaviour, mindset and perception of individuals. This way of perceiving the self, in terms of a social identity, is in SCT the point of departure in the explanation of multiple group phenomena such as stereotyping, cohesiveness, ethnocentrism, etc. (Hypothesis 3, Turner et al., 1987, p. 50, 56-67).

In the next chapter, we will describe the first step before this cognitive shift from a personal to a group perception, that is, the process by which a self-categorization becomes salient; how perceivers end up by using one or another categorization in a certain context.

CHAPTER II

Cognitive processes in the salience of self-categorizations

In this chapter we focus on the cognitive access to social and self-categories. SCT refers to the result of the mechanisms that bring a self-category in use as "salience" (Turner et al., 1987, p. 54). The explanation of salience completes the overview on self-categorization that we gave in Chapter 1; in the prior chapter we explained how self-categories form, here we want to clarify how they can be accessed. We dedicate a separate chapter to this topic because salience is of special interest for this work. As we explained in the Introduction (p. 8), the mechanisms of salience are central for the hypothesis of dual identity; in particular the comparison through meta-contrast since the higher order classification (superordinate category in dual identities) provides the frame of reference for ingroup-outgroup comparisons, with consequences for dual identities. Therefore we devote some attention to the issue of comparisons by meta-contrast giving several examples and references. Another reason to describe salience in a separate chapter is that other kinds of models, particularly models within a social cognition framework, have different views about the mechanisms of salience that are also useful to understand our work. Hence in this chapter we offer two explanations of the way social categories are accessed and applied, first the one that is predominant in the social cognition tradition and second the one based on SCT.

An essential point for the theories about social categorization, self-categorization (SCT, Turner et al. 1987; impression formation models, Fiske & Neuberg, 1990; Brewer, 1988), and multiple categorization is how self-categories become salient (Crossed categorization model, Deschamps & Doise, 1978; Common ingroup identity model, Gaertner & Dovidio, 2000; Ingroup projection model, Mummendey, Meiser, &Waldzus, 2002; Social identity complexity model Roccas & Brewer, 2002). Salience of social categories is important for such theories because they aim to explain behaviour in social situations and salient categories provide the set of knowledge that is applied to make sense out of and respond to social situations. When self-categories are salient the corresponding set of knowledge about the group membership is applied and has implications for the way people think about and behave toward others (see Brewer, 1979; Hamilton, 1979; Kramer & Brewer, 1984; Turner, 1982; Wilder & Shapiro, 1984; Oakes, 1987). To be able to make predictions about the responses of people in different social contexts, it is, therefore, fundamental to understand which self-categories will be used. Furthermore, knowing how self-categories become salient

is important because in the same situation people can change the way they categorize themselves and others. To sum up, salience is the concept that refers to how and which categories will be activated in a situation. In this chapter we want to investigate the cognitive mechanisms involved in the use of self-categories: how, from all the self-categorizations that are possible in a context, is one preferred over others? Based on this investigation we will then make inferences about having more than one self-categorization salient at the same time in the following chapters, where we talk about dual and multiple categorizations.

To compare the two views about the salience of social self-categories we revise their guiding principles and the mechanisms they propose to be at work when self-categories become salient. The first view is characteristic for the Social Cognition literature and the other is more prevalent in the Social Identity tradition (Oakes, 2001); the latter view is the one that we have been reviewing so far. Despite their common roots, the two views are based on different principles guiding cognitive activity so they explain the processes underlying categorization differently. Between the two there is a difference in the way of defining salience that will be explained; the word *salience* is used in both traditions with different meanings however they both offer an explanation of how categories are accessed using different terminologies.

Salience or Activation in Social cognition

The first view, social cognition, is guided by the idea that people have a limited amount of cognitive resources to perform activities and that the information delivered is vast and complex. Therefore early researchers in the social cognition tradition described cognitive mechanisms as operating to reduce the complexity of information (Lippmman, 1922). Later however, cognitive mechanisms were considered to be aimed for an efficient use of the information and capacity available, so that perceivers can more easily achieve their goals (see Fiske & Taylor, 1991; Macrae, Milne, & Bodenhausen, 1994; Sherman, Lee, Bessenoff, & Frost, 1998). These two ways of understanding the principles in social cognition have been referred to as the "cognitive miser metaphor" and the "motivated tactician metaphor" (Macrae & Bodenhausen, 2001). Stereotypes are one of these simplifications or efficiency-oriented mechanisms. From the point of view of the "cognitive miser metaphor", stereotypes are expected to simplify social contexts and are defined as the oversimplifications of social

categories that allow a faster and more efficient judgment of people (Brewer, 1988; Fiske & Neuberg, 1990; Hamilton & Sherman, 1994; Medin, 1988; Sherman, 1996).

Based on the principle of scarcity in the cognitive miser approach it was argued that stereotypes are activated in an automatic way (Bargh, 1989; Blair & Banaji, 1996; Devine, 1989). That means essentially that the application of stereotypes is mostly a non-conscious process and is out of the control of the perceivers (Allport, 1954; Devine, 1989; Dovidio et al 1986; Perdue & Gurtman, 1990). Early social cognitivists were inspired by the functioning of computers as a model to understand human cognitive processes. The sequence of events in human cognition would be similar to the ones in a CPU: information in the environment would be put in, then processed and saved and retrieved from memory, and lastly perceivers would provide a response. In this vein one mechanism hypothesised to explain how stereotypes and social categories become salient automatically without effort and awareness was the activation of social categories by cues present in the environment (Fiske, Neuberg, Beattie & Milberg, 1987; Bodenhausen & Macrae, 1998). "Activation" refers to bringing the representation of the category to mind (Higgins, 1996). "Cues" are stimuli in the environment or in the target person that trigger the application of the category necessary to process the information in the social context. This mechanism can work automatically because the cue and the category are supposed to be cognitively associated in memory. Cues and categories are associated in terms of a cognitive structure that contains both the cue and the category (Anderson & Bower, 1972; Collins & Loftus, 1975; Devine 1989, Dovidio et al 1986, Lepore & Brown, 1997). For this reason when the cue is in the environment, the category is more likely to be brought to mind. This relationship between cues and categories will be discussed later on (Chapter 5) when we talk about network models.

Regarding the cognitive use of social categories, there is an important difference in the terminology used in social cognition and in SCT: what in SCT is called "salience of social categories" is often in social cognition literature the "activation of stereotypes" (Oakes, 2001; McGarty, 1999). This involves two essential differences of social cognition compared to the SCT: (1) that stereotypes more often than self-categories are what is addressed in social cognition studies; (2) that the word "activation" is preferred to the word "salience" to refer to the application of a category in the interpretation of a social situation. Moreover, the word "salience" can be used by social cognitivists to designate a different process: Higgins (1977; 2000) defines "salience" as the property of the cue that is triggering the category/stereotype,

which is able to grab the perceiver´s attention. The categories triggered by the salient cue become active and are applied to perceive other people.

One criticism that has been directed to the activation of categories through environmental cues is that this mechanism does not directly explain how the same people can be categorized in more than one category, neither what happens when in the same social environment the perceiver find cues associated to more than one category. Even if we think in terms of the "motivated tactician metaphor" (Macrae & Bodenhausen, 2001), a more controlled and sophisticated approach to the use of cognitive processes (categorization) than the "cognitive miser metaphor", still, the principle of using efficient mental processes that are in line with the needs of the perceiver is not coherent with the use of information about more than one category for the same person. To answer these questions about multiple categorization researchers carried out additional studies. Bodenhausen and Macrae (1998) and Sinclair and Kunda (1999) tested how perceivers would select a category to apply to a target with many cues in the environment. Macrae, Bodenhausen and Milne (1995) studied the categorization of the same person in more than one category and if the application of multiple categories was possible. They found that just one of the categories will dominate the perception of the target while the other one would not play a role and even be inhibited. Other researchers studied variables in the perceiver to explain changes in the selected categories: categorical knowledge structures (e.g., Blair & Banaji, 1996; Lepore & Brown, 1997; Locke et al., 1994; Macrae et al, 1997; Wittenbrink et al, 1997), temporary processing goals (e.g., Blair & Banaji 1996, Macrae et al 1997, Spencer et al 1998) and general attitudes (i.e. prejudice level) toward the members of the category in question (e.g., Lepore & Brown 1997, Wittenbrink et al 1997). Lepore and Brown (1997) for instance, found that even in the presence of a stereotypic cue, people with an egalitarian orientation will not categorize in a stereotypic manner. Altogether this research shows that a cue to a category (trigger) does not necessarily activate the associated social category, additional environmental and personal factors play a role in categories that become salient. These factors can explain the regulation of cue to category activation, but have not yet been articulated with the use of more than one categorization.

Salience in SCT

The second view, the social identity tradition is guided by the idea that people adapt to social environments and that they try to find the most appropriate responses for each social context. It is assumed that behaving as a member of a social group is often the most appropriate response in social situations. Self-categorization is the process that allows people to act as social group and therefore adapt to the social context; there is a functional relationship between categorization and its context (Oakes, 1987). One important source of information when adapting to the social environment is taking into consideration the similarities and differences between the self and the other people that are present in that context (i.e. making comparisons; see Chapter 1). Comparison is a mechanism that according to SCT is both important when forming new self-categories, as presented in Chapter 1, as well as when using the categories already formed. When people are applying categories earlier formed and stored, they also consider the information they already have about the self-categories that also plays an important role in which categories will become salient. This former source of information together with comparison by meta-contrast, ensures the best *fit* of the salient categorization. In the process of making a categorization salient, the mechanism of comparison ensures attaining *comparative fit*, whereas considering prior information about categories ensures *normative fit*.

These two ways of looking for fit and the accessibility of self-categorizations (Turner et al., 1987, p.54-55) are the factors hypothesized to determine the salience of a self-category. *Fit* means that perceivers consider characteristics of people and the social context to find a proper categorization system. Perceivers look for similarities and differences between people, in addition to considering the characteristics associated to the stereotypes of categorizations they know. On the one hand perceivers ensure that self-categorization maximises the differences with other groups and the similarities in the self-category (comparative fit). On the other hand they look to the meaning of the self-categorization so that it is in line with the attributes of the people in the situation (normative fit). Comparative fit is achieved through maximization of the meta-contrast ratio introduced in the prior chapter. To understand the difference between these two forms of fit we can think about them as top-down and bottom-up processes (e.g., Treisman & Gelade, 1980; Fiske & Neuberg, 1990; Brewer, 1988). Bottom-up processes are driven by the stimuli, that is, perceivers' focus on the information in the environment and process it to reach a conclusion; similarly comparisons to attain comparative fit are based on the differences and similarities between stimuli. In top down

processes, perceivers are guided by pre-existing knowledge to process stimuli; the look for normative fit is based on the knowledge about the meaning or definition of a category that the perceiver already processed before. Finally, *accessibility* refers to the readiness of the self-categorization, or how easily it comes to mind. Accessibility depends on prior experiences of the perceivers and on their motives. In other words, how important a self-category is in a person´s identity and how much this self-category is used in certain contexts has a central impact on its accessibility. For instance, somebody will use the category French in a certain context if other people rather than French are also present in the same context (comparative fit); if he or she possess some of the features that typically identify French (normative fit); and if she or he has used the categorization French before (accessibility).

Comparisons and the calculation of Meta-contrast

According to SCT, Meta-contrast is one of the principles at work in the operations people use to find meaningful self-categories in context; it is used both to create new self-categories and to make existing self-categories salient. In principle calculating a meta-contrast ratio includes the processes of comparing and spotting the similarities and differences between oneself and the ones around. People can consider themselves as generally very similar to the ones around and accordingly use just a very broad self-categorization that includes themselves and all the others, such as "humanity". But often people see differences between themselves and some people and similarities between themselves and others, so they perceive at least two categories: one with others from the same self-category as themselves (ingroup members), which are seen to be similar to them, and another with those from the other category of which they are not part (outgroup members), which are seen to be different from them. The operations in meta-contrast we described in Chapter 1(intra-class comparisons, inter-class comparisons and the ratio of the two; p.24) are presented in the literature as a clear, structured, arithmetical process (McGarty, 1999). Several different ways of calculating meta-contrast have been described; here we give some examples of the calculations of meta-contrast, in accordance to the purpose with which they are used.

(1)The following two examples illustrate how based on the meta-contrast principle a certain categorization becomes salient. The first example returns to the hypothetical situation described in the introduction, in which we enter the waiting room in a doctor appointment consultation and we find ourselves together with 6 other people: three women and three men.

The process through which the gender categorization becomes salient in this context would be the following: we check differences and similarities between people with a different gender. If there are for instance three men wearing glasses but no woman wears them, we count the differences between men and women; the three men are wearing glasses and none of the three women wears them (inter-class differences = 9, every man compared to every woman). We count as well the differences within the male category and there are no differences in this category since all men wear glasses (intra-class differences = 0). A different situation would arise if instead of 3 men wearing glasses and 3 women not wearing glasses, only a man in the room had glasses. In that case the differences between gender categories are smaller, since there is only one man that is different and compared with three women not wearing glasses (inter-class differences = 3). Moreover the differences within the male category are greater than in the previous situation, 2 men not wearing glasses are compared to 1wearing glasses (intra-class differences = 2). The ratio is here 3/2. According to theory the meta-contrast ratio is higher in the first situation and the gender categorization more likely to be salient.

The former example is based on the experiments in Oakes and Turner (1987; 1991). Participants in the experiments saw a video with 6 people expressing their opinion about a topic related to gender. In two conditions in the video there were 3 men and 3 women in the discussion group, the 3 men and the 3 women can either agree within their gender (agreement) or one of the men would disagree with all the others (disagreement). In this way researchers were manipulating differences within and between the categories, changing the comparative fit. It was expected that the gender categorization was more salient in the condition with the higher contrast between categories and the lower contrast within categories, that is, in the agreement condition. Even if authors did not do this calculation, we can think that in terms of meta-contrast, in the agreement condition there were no differences within the categories (all men agreed with each other and disagreed with all women) and 9 differences between them (each man with each woman). In the disagreement condition however there were 2 differences within men, and three differences between men and women, ratio = 3/2. Researchers measured the changes in the salience of gender-categorization and indeed found the expected difference between the two conditions. This last example can even be more illustrative of how salience is achieved: it depends both on the calculation of meta-contrast and the normative fit of the dimension used to compare; this manipulation preserves the normative fit of the categorization given that the topic discussed was gender-related, whereas in the prior example about men and women wearing glasses the differences identified

between the categories are not normative for gender ("wearing glasses"). We would expect even higher salience in the second example than in the first (because of normative fit) even if the meta-contrast is the same.

(2) Another way of looking at the meta-contrast ratio is to use it to decide if a target person belongs to the same category as the self. Meta-contrast influences if a certain self-category will be salient to categorize this person. In this case the differences in the meta-contrast are only calculated between the self and other people. This is the reasoning in Haslam and Turner (1992). The authors use a numerical difference between the self and a target person in a social context to illustrate meta-contrast ratio. To have an exact measure of differences they present ratings on a political orientation scale. In their example, they gave the self a rating of +3 and the target person a rating of -3. Nine other people are included in the example with different ratings (-5, -4, -2, -1, 0, +1, +2, +4, +5). Haslam and Turner (1992) calculated the differences of all positions with the self, and the difference between the self and the target to calculate the meta-contrast. This corresponds to checking the relation (ratio) between the differences in the possible ingroup (including the self and the target person) or intra-class differences and the differences to the possible outgroup or inter-class differences (all the other people). The first is the hypothetical difference between category-members in case the self and the target are categorized in the same ingroup against all the others. The second is the difference between members of the same hypothetical ingroup and all other people in the context. The mean of differences between all people and the self-group (inter-class differences = 66/20 = 3.3), was smaller than the mean difference between self and target, (intra-class differences = 6), therefore the authors concluded that the target would not be categorized in the same category.

By showing these examples we intend to illustrate the central role of comparisons in the salience of a categorization. It is important for this thesis; what are the results of the meta-contrast and the way they are obtained. The consequence of high meta-contrast is the differentiation of groups and the salience of a category; the process to obtain salience is the observation of inter-category differences and intra-categories similarities. The particular formula suggested by SCT for the meta-contrast is less important than the more general notion that inter-category differences and intra-category similarities increase the salience of a category. This configuration of differences and similarities is first obtained with the exercise of comparison and later enhanced when the category is salient through the *accentuation effect*

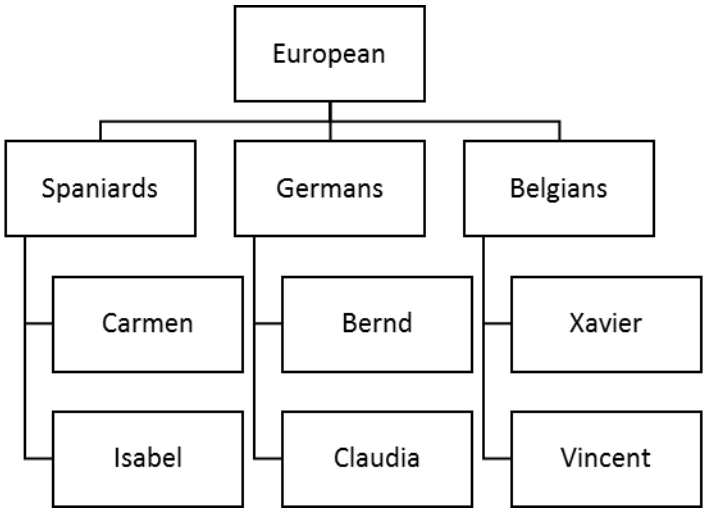
(see Chapter 1; see Turner et al. 1987, p. 49). There is mutual interdependence between the salience of a category and the configuration of differences and similarities.

Taking into account that similarities within groups and differences between groups are strengthened when a category is salient, together with the fact that levels of self-categorizations are hierarchically organized, the theory assumes that when one self-categorization is salient at one level, the next more abstract level of categorization will not be salient. The reason for this *functional antagonism* (Turner et al., 1987; p. 49) between self-categories is that while the salience of one level of self-categorization is based on comparison and the strengthening of differences between the two categories, the salience of a category on the next higher level is based on their similarities (see Assumption 5; Turner et al. 1987; p.45). The next more abstract level of categorization is indeed enhancing the similarities between categories, since, as we said earlier, for two stimuli to be compared, they have to share a common ground, that is, have to be categorized as sharing one characteristic (see Assumption 7; Turner et al. 1987; p.46). If we take for example the experiment of Oakes and Turner (1987; 1991) presented before, the categorization of people in the discussion group as men and women strengthens the perception of inter-class differences (man vs. women) and intra-class similarities, i.e. most men agree with other men and most women with other women and men and women have different opinions. Insofar as the differences between men and women are perceived as greater than the differences among men or among women the categorization by gender is meaningful. The categorization of people as participants in the discussion group is possible if the differences between men and women are reduced or disappear, that is, they all have the same opinion and gender categorization is no longer meaningful because there are no gender differences. Therefore the categorizations as people in the discussion group and as men and women are not compatible with each other because the former is based on differences and the other in similarities. People in the discussion group can be the higher level of categorization and it only makes sense as long as the similarities between members of this category are recognised; the differences between members of this category, men and women (intra-class differences for the higher level of categorization) have to be lower than the differences between this category and other hypothetical categories, such as people in a different discussion group (inter-class differences for the higher level of categorization).

Oakes, Haslam and Turner (1998) use another example of meta-contrast that is illustrative of the dynamics between levels of categorization. They describe a hierarchy of

self-categorization with 3 levels: 6 cases on the individual level, Carmen, Isabel, Bernd, Claudia, Xavier and Vincent; 3 national levels, Spaniards, Germans and Belgians; and a superordinate level, European (see Figure 4).

Figure 4.Example of levels of categorization and the calculation of meta-contrast. Adapted from The Role of Prototypicality in Group Influence and Cohesion: Contextual Variation in the Graded Structure of Social Categories (p. 82), by P.J. Oakes, A.S. Haslam, & J.C. Turner, (1998).In S. Worcher, J.F., Morales, D. Páez, & J.C., Deschamps (Eds.).*Social Identity.International Perspectives*. London: Sage Publications.



In this context the calculation of the meta-contrast by, for instance Carmen, will make the self-category Spaniards salient: the perceived differences between Carmen and Isabel are smaller than the ones perceived with other people in the context. Between Carmen and Isabel there are no differences in nationality whereas among all other people present (Carmen vs. Bernd vs. Claudia vs. Xavier, vs. Vincent; Isabel vs. Bernd, vs. Claudia, vs. Xavier, vs. Vincent; Bernd vs. Xavier, vs. Vincent; Claudia vs. Xavier, vs. Vincent) there are 12 differences in nationality. With no intra-class differences and 12 inter-class differences, the meta-contrast ratio will make Spaniards a salient self-categorization for Carmen. In this case, even though Carmen is also European, she will not be categorized as such. The self-categorization European will not be salient, since there are no differences between Carmen and all other people in terms of their "europeaness". All people in the context share this self-

category they are equivalent as European. As assumed by SCT, the salience of the self-category Spaniards relies on the differences between people that are within the category of Europeans; whereas the self-categorization European makes them all equivalent, therefore they are functionally antagonistic. As Spaniard, Carmen is different from Bernd, Claudia, Xavier and Vincent, as European she is the same.

Final considerations: bringing the two views together

This last example illustrates a critical question about salience of categorizations and functional antagonism between levels of categorization. On the one hand we have theories in the social cognition tradition that would predict the categorization European to be salient insofar as there are associated cues in the context such as the nationality of the people. On the other hand we know that SCT assumes an incompatibility between the two related levels of categorization such as Spaniard and European, because they are based on opposite processes (perception of differences vs. perception of similarities).

There is indeed disagreement between the principles proposed to make categories salient in social cognition and SCT; Oakes (1996; 2001) for instance criticizes the assumption that salient cues can activate any self-category independently from its value for the creation of meaning in a given context (fixed cue-category relationship). However the two ways of explaining salience are not necessarily incompatible or contradictory. If we go back to the examples given to explain comparisons and meta-contrast, we see that perceivers might not go over all the possible comparisons and try all possible division criteria. In this sense it can be valuable to integrate the role of cues that are provided by the context to explain how fast some criteria of categorization do appear in mind without going through comparisons. The social identity tradition favours the idea that the accessibility of the category can explain the appearance of a criterion of categorization to calculate meta-contrast and the idea of a triggering clue might be contained in the idea of accessibility. For instance, previous experience is explicitly assumed by SCT to have an impact on accessibility. Such previous experience includes classical primacy and "recency effects" studied in social cognition (see Srull & Wyer, 1989; Hastie & Kumar, 1979).

Seeing the two ways of understanding salience as two aspects of the same system is also valuable to explain multiple identities (see Chapter 3). The associative view in social

cognition allows understanding the cognitive mechanisms for the use of several self-categories simultaneously as proposed by models of multiple identities and dual identities (e.g., Deschamps & Doise, 1978; Roccas & Brewer, 2002; Gaertner & Dovidio, 2000; Mummendey, Meiser, &Waldzus, 2002). The view of comparisons and functional antagonism in SCT explains how accessing contradictory information about self-categorizations is avoided so that it does not interfere with the regular social processes. In the next chapter we will extend this idea of contradiction versus complementarity between the cognitive processes towards the salience of categories, to clarify the findings about dual identities. We propose that there are two cognitive processes present in different situations where dual identities can be accessed; each of them is based on one of the two frameworks described in this chapter, social cognition and SCT.

CHAPTER III

Dual identities and multiple self-categorizations: the simultaneous salience of self-categories

In this chapter we start by explaining how the ideas of multiple and dual identities appeared in the context of self-categorization and intergroup bias; we define multiple and dual identities and explain the connection between the two and with intergroup bias. Then we give some examples of models of dual identities and of their empirical research (i.e. Gaertner & Dovidio, 2000; Mummendey, Meiser, &Waldzus, 2002) to examine (1) the cognitive possibility of dual identity; (2) and the different connections between the self-categories in dual identities presented in the experiments testing the different models. We argue that (1) the salience of two self-categories simultaneously is not always possible; (2) that, although the models have similar concepts of dual identity, the operationalization, particularly of connections between the self-categories, in their experiments is rather different.

Considering the assumed connection between self-categorization, social identity, intergroup bias and discrimination and prejudice (see General Introduction; Figure 1), researchers have looked for the possibility of intervening in intergroup bias and discrimination through changing people's self-categorization (see p. 4). Changes in self-categorization were aimed to reduce or control intergroup bias. One of the ideas explored is the one of changing the representation of groups by enhancing the salience of multiple identities within a context (Deschamps & Doise, 1978). Multiple identities change the representation of group memberships because they are bringing in more than one self-categorization to self-definition. *Dual identities* are a particular form of multiple identities in which two self-categorizations are in use, and, in the frame of a hierarchical organization of identity, one of the self-categorizations in dual identities is the next higher level of categorization of the other (see Rosch, 1979; Chapter 1, p.21); that is, the lower level of self-categorization is fully included in a higher level one. One good example is the one of national categories and the European context: using the self-category German, for instance, implies the inclusion in the category European, since European is a higher self-category level of German. There is a semantical relationship between German and European, but also an asymmetric logical relation because all Germans are Europeans but not all Europeans are Germans (see Crisp, 2009; Dovidio, Gaertner, Hodson, Riek, Johnson & Houlette, 2006). Enhancing multiple identities has implications on intergroup bias, discrimination and prejudice because it

changes the perception of self-categories, ingroups and outgroups (see Deschamps & Doise, 1978; Vanbeselaere, 1987). It is hypothesised that shifting the attention to another self-categorization attenuates the differentiation between the ingroup and the outgroup (Doise, 1978; Dovidio, et al., 1998).

There are various theories in Social Psychology that propose the use of multiple self-categories in people's self-representation: The crossed categorization model, the common ingroup identity model, the ingroup projection model, the social identity complexity model (Deschamps & Doise, 1978; Gaertner & Dovidio, 2000; Mummendey, Meiser, &Waldzus, 2002; Roccas & Brewer, 2002). It is not uncommon to find research reporting the use and experience of more than one self-categorization simultaneously (e.g., Deschamps & Doise, 1978; Urban and Miller, 1998; Stangor, Lynch, Duan, & Glass, 1992; Gaertner & Dovidio, 2000; Mummendey, Meiser, &Waldzus, 2002; Roccas & Brewer, 2002). These theories developed in the literature despite the fact of functional antagonism (i.e., the impossibility of two self-categories at a different level of inclusiveness becoming simultaneously salient; see Chapter 2), which is an important assumption of SCT. And indeed, empirical tests of the aforementioned models suggest that at least under some circumstances, the simultaneous activation of two social identities is possible. However, the questions of how and under which conditions multiple, and particularly dual identities are cognitively possible has found less attention. The cognitive processes that allow two self-categorizations to become simultaneously salient have not yet been studied. Based on the theories about the salience of self-categories (see Chapter 2) and the evidence in research, we consider that Social Psychology accepts two hypotheses: one that admits the possibility of simultaneous salience of nested categories, through co-activation, and a second one that excludes that possibility, on the account of functional antagonism.

Co-activation hypothesis

This hypothesis suggests that two related self-categories can actually be salient at the same time. It is based on the assumption that there are associative connections between subgroups and superordinate categories in semantic memory and that these connections lead to the simultaneous activation of the two categories. Because general theory about memory proposes that the storage of concepts relies on creating associations between information related to the concepts, it seems plausible that memory for social categorization and social

identity is organized in a semantic network. This network should be created on account of the associations between social targets' differences and similarities. Furthermore, inspired by research on associative priming in cognitive psychology (e.g., Meyer & Schvaneveldt, 1971) social psychologists (e.g., Greenwald et al., 2002; Greenwald & Banaji, 1995) showed that similar associations that exist between physical objects (e.g., bread and butter) also exist between social objects (e.g., American and White, Devos & Banaji, 2005). For instance Devos and Banaji (2005) showed that the subcategories African American, Asian American and White American are all associated to the superordinate concept of American but that these associations have different strength (White American and American displaying the strongest association). Therefore subgroups and superordinate category should be associated in memory as they are part of the same representation of a social identity. As a consequence, when subgroups are activated the associated superordinate categories will also be affected. Due to the spread of activation phenomenon, a superordinate category associated with subgroups will be activated whenever subgroups are (Collins & Loftus, 1975). Researchers claim that activation in a priming task goes from one element to another in the network (Anderson & Pirolli, 1984) making the latter ones more accessible to be activated in the subsequent tasks.

Results of recent research on dual identities and the fact that there are theories proposing that people simultaneously hold a strong identification with subgroups (e.g., Black Portuguese or White Portuguese) and with a superordinate category (e.g., Portuguese) favour this first hypothesis (Gaertner & Dovidio, 2000; Hornsey & Hogg, 2000; González & Brown, 2006; Guerra, Rebelo, Monteiro, Riek, Mania & Gartner, 2010; Wenzel, Mummendey, Weber, & Waldzus, 2003).

Functional antagonism hypothesis

The second hypothesis is derived from SCT. SCT proposes a functional antagonism between the salience of the subgroup-level identity and the salience of categorization on the superordinate level. That is to say, it should not be possible to have two nested social categories activated at the same time. Functional antagonism is based on the idea that two categorizations on different levels of inclusiveness lead to antagonistic accentuation of differences or similarities between the subgroups or within the superordinate category, respectively (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). When focusing on their

subgroup category, perceivers will consider what differentiates them from members of other subgroups. However when focusing on the superordinate category, perceivers will consider more what they have in common with all other members of the superordinate category, including outgroup members. In an experiment Mlicki and Ellemers (1996) found that participants could only use one self-categorization level at a time; they either use European or Dutch. They argue that the similarities between European nations were enhanced in the case of European identity, while differences between the Netherlands and other countries were enhanced in the other case. According to SCT the likelihood of simultaneous salience of two levels of identity is rather small: In each situation, and depending on the social context, people either perceive large differences between social group members, and they categorize them as different groups, or they perceive small differences (or more similarities) and they consider them as members of one single group. As we discussed in Chapter 2, the results of comparisons in the meta-contrast ratio will either strengthen the perception of differences between the ingroup and outgroups making salient the categorization at this level or strengthen the perception of similarities making salient the categorization at the higher level of categorization.

Consistent with the idea of functional antagonism, research about the cognitive principles of spread of inhibition shows that there are inhibitory forces acting upon the cognitive system. Neumann and DeSchepper (1992) found that in some situations the information related to one activated concept in memory does not become active. This process has been tested for both social and non-social stimuli. Macrae, Bodenhausen and Milne (1995) observed that participants primed with one categorization criterion where unable to use a second criterion in judging a social target. In two experiments they presented a target with two different social categories available, the target was both a Chinese and a woman. Participants were primed with one of the two criteria, Chinese or women; afterwards the time they needed to react to Chinese and women related words was measured in a lexical decision task (LDT; Wittenbrink, Judd & Park, 1997). Compared to neutral words, response latencies to the words related to the primed category were faster while latencies to the non-primed one were slower.

The moderating conditions of dual identities: the connection between two self-categories

Based on the literature about dual identities, we consider that these two mechanisms, co-activation and functional antagonism, should both be possible however in different situations. The different operationalisations and the inconsistent results regarding the use of dual identities seem to support the hypothesis of different processes taking place in different contexts. We examine the concepts and operationalisations of dual identities and the results obtained in experiments to identify the conditions in which co-activation and functional antagonism will take place.

Historically researchers based their models of multiple categorization either on the idea of the hierarchical organization of self-categories and the possibility of moving between levels of identity (e.g., common ingroup identity model; Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993; ingroup projection model; Mummendey, Meiser, &Waldzus, 2002); or in an understanding of self-categorization "in a network of affiliations which cross each other" (Doise, 1990, p. 312). In the case of "network of affiliations" people can identify with self-categories that are not necessarily related as in the case of hierarchical identity (e.g., crossed categorization; Deschamps & Doise, 1978; Crisp, Hewstone, & Rubin, 2001; Vanbeselaere, 1987). Simultaneous self-categorizations in this case occur along different criteria of categorization (see the next topic).

The relationship between self-categories in a multiple/ dual identity

The two views on the organization of self-categories, hierarchical or in a network, leads to different conceptions of the relationships between these two self-categorizations researchers use. In the field of multiple identities generally researchers work with two self-categorizations (Urban & Miller, 1998), therefore and for issues of simplification and because dual identities are our main research topic, we will consider multiple identities with only two categories. The relationship between the two self-categories can be of two types; (a) We can find that the two self-categorizations are conceived as *independent or orthogonal* as in the case of self-categorizations in a network of affiliations (see Crisp, 2009). Two categorizations that are independent from each other result from two criteria of differentiation, for example, Muslim as self-category is a categorization dependent on religion as a criterion, whereas Woman is a categorization in terms of gender. When categories are independent, the membership in one category is not related to the membership in the other; people that are members of one category do not have to be members of the other. Research on crossed

categorization uses this sort of self-categories, for example, being Muslim is not related to being a Woman; you can be a Muslim regardless of being a man or a woman, and knowing that you are a woman does not provide any information about the religion you follow (Hewstone, Islam, Judd, 1993; Crisp, 2009). (b) We can also find cases in which the two categories are conceived as *positively correlated or dependent*: the membership in one category is correlated with the membership in the other, i.e. being a member of one of the categories makes it more likely to be a member of the other (Crisp, 2009). Two self-categories that are generally correlated are male and engineer self-categories. Being categorized as an engineer makes it more likely to be also a man. Categories represented in a hierarchical system are an extreme case of positive correlation for example the category of Germans is positively correlated to the category of Europeans; members of the first category are necessarily also members of the latter one (see Waldzus, Mummendey & Wenzel, 2005). The meaning of these categories depends on each other; Germans are by definition Europeans, being European is one attribute of the German category (German is a subtype of European).

The structure of self-categories in a multiple/ dual identity

Another way to look at the relationship between two self-categories in a multiple identity is on the basis of their structure. Structurally, self-categories can be separated or overlap. When categories overlap each of the members of one of the overlapping self-categories includes members of the other. The two categories can either overlap completely so that all members of one of the categories are also members of the other (nested structure); or they can overlap partially (cross-cutting structure), just some of the members of the first category are also members of the second. The structure in a hierarchical view of organization of social identity proposed by SCT refers to completely overlapping categories: lower level categories are embedded in higher level categories (see Turner, et al., 1987; see Chapter 1). In dual identities the superordinate categorization encompasses the subordinate one; there are two self-categorizations at a different level of abstraction that overlap.

Often when self-categories in dual identities are unrelated they do not have a nested structure either, however it is possible that uncorrelated self-categories are perceived as forming a nested structure (e.g., Black and Women are unrelated categories, however they can form a nested structure if black women are compared to black men), hence we treat correlation and structure as two independent factors defining dual identities.

Self-categories in dual identities: related and nested?

Based on the prior ideas and because dual identities are grounded on the hierarchical organization of social identity (Gaertner & Dovidio, 2000; Mummendey, Meiser, &Waldzus, 2002), we would expect to find the two self-categorizations forming dual identities to be nested and positively correlated. Nevertheless we can see that some experiments testing the hypothesis about effects of dual identities do not use positively correlated and nested self-categories. For instance, in the common ingroup identity model (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993) even though the model is based on the hierarchical organization of identity, we find experiments in which self-categories forming dual identities are unrelated and which do not use completely nested categories. In these experiments neither does the membership in one of the categories correlate to the membership in the other nor do the meanings of the categories depend on each other. An example of an experiment with unrelated self-categories in dual identities is the one in Dovidio, Gaertner and Johnson (1999); authors used race-based groups and introduced University as superordinate category. Race and University membership are not correlated categories: being a member of the category White does not imply being a member of the University. Race and University are two independent categorization criteria. These self-categories are also not nested, White and Black categories cut across the superordinate category: University. Another example of uncorrelated and not nested categories in research on dual identities is the study of Riek and Gaertner (2002), Riek, Mania, Gaertner, McDonald and Lamoreaux (2010), in which researchers use the self-categorizations Democrats (or Republicans) and the superordinate categorization problem-solving team. Self-categorizations as Democrats (or Republicans) and problem-solving team are not related self-categories and they do not create a completely nested structure of categorization either; Democrat participants in the experiment are part of the problem-solving team, however other Democrats are not.

With these examples we intend to show that only part of the self-categories that we find in the literature forming dual identities are correlated and nested even though we define dual identities theoretically in a hierarchical organization and therefore as two correlated self-categories of a different level of abstraction organized in a nested structure. Hornsey and Hogg (2000) argue that self-categorizations in real life are seldom perceived as nested and more often as cross-cutting. They gave the example of organizations where people are

members of role-related categories (sales person, manager, accountant, etc.), and these categories extend beyond the limits of the superordinate organization. According to Hornsey and Hogg (2000), nested structures are only found in the case of extremely inclusive superordinate categories, such as human or worker. Brewer and Pierce (2005) present a similar idea, for them some categories are naturally embedded in others (e.g., all Catholics are Christians), but often the semantic ambiguity between double identities allow people to perceive them as being cross-cutting or nested. Perceivers can see the categories in intersection, just partially overlapping (cross-cutting); or in union, where there is a complete overlap between them (nested). For instance being an Italian and a Catholic allows both representations: someone who is Italian and Catholic can either think about the two self-categories in an intersection holding a representation of Italian as partly Catholics partly not Catholics; or in a union seeing all Italians as necessarily Catholics.

Although we can observe logical relations between self-categories these relations do not totally determine the way they are perceived and applied. Perceivers can see self-categories as nested or cross-cutting, related or non-related, differently from what could be expected on the basis of their logical relations. Because the relevance form comparison depends on the perception of correlation and structure (see pp.12-15), the relevance of the superordinate will also be different from what would be expected based on the logical relations between self-categories. To know beforehand the relevance of the superordinate categories requires assessing them directly through a pre-test. For this reason for our experiments rather than considering the objective relatedness or structural alignment of these self-categories we run a pre-test in which we identified the perceived relevance of the superordinate categories (see p. 55).

Implications of the correlation and structure between self-categories in dual identities

It is important to understand the structure and the correlation between categorizations in dual identities because they might be factors involved in the different processes in the salience of self-categories. Earlier in this chapter we identified the processes of spread of activation in dual identities' self-categories due to co-activation, and of inhibition between these same two self-categories due to functional antagonism. Functional antagonism results from the comparison and the perception of differences at the subgroup level, being incompatible with the perception of similarities in the superordinate category (Chapter 2).

Therefore, functional antagonism occurs when there are comparisons between subcategories, functional antagonism can occur if the superordinate category is relevant for the comparisons between groups. Correlation and structure are factors of the relevance of the superordinate category for intergroup comparisons, that means that the ability of the superordinate categories to function as the background for intergroup comparisons between sub-categories is dependent on correlation and structure (see General Introduction, p.9). High correlation between self-categories and nested structure are likely to be linked to high relevance of the superordinate category for intergroup comparisons and hence to functional antagonism.

Self-categories in dual identities in the experiments on the common ingroup identity model and on the ingroup projection model often seem to have different correlations and structure. It is useful to check if these differences are associated to the contradictory results obtained in these experiments to understand the conditions for processes in dual identities. Experiments in the common ingroup identity model tradition often use independent and not nested categories and show a reduction of intergroup bias by dual identity (e.g., González & Brown, 2003, 2006); and experiments testing the ingroup projection model use correlated and nested categories showing an increase in intergroup bias (e.g., Mummendey & Wenzel, 1999; Wenzel, Mummendey, Weber, & Waldzus 2003). Additionally, when experiments on the common ingroup identity model use correlated superordinate self-categories such as step-families in blended families (Banker & Gaertner, 1998) or nested structures such as corporate mergers (Anastasio, Bachman, Gaertner & Dovidio, 1996), results are in line with the ingroup projection model and show an increase of intergroup bias by dual identity or no effect (see Table 1).

Table 1.*Effects of dual identities*

	Categories		
Dual identity associated with decrease of intergroup bias	Students of different ethnic background attending a multi-ethnic high school	Uncorrelated and cross-cutting self-categories	Gaertner, Rust, Dovidio, Bachman, & Anastasio (1996)
	Laboratory groups: analytic or synthetics and cooperative task between subgroups	Uncorrelated and cross-cutting self-categories	González & Brown (2003; 2006)

Dual identity associated with increase of intergroup bias	Business administration students or psychology students, and students in general	Correlated and nested self-categories	Wenzel, Mummendey, Weber, & Waldzus (2003)
	Germans and Poles, and European		Wenzel, Mummendey, Weber, & Waldzus (2003); Waldzus & Mummendey (2004); Waldzus, Mummendey, Wenzel & Weber (2003).
	Banking executives of two companies and corporate merging group	Nested self-categories	Bachman (1993); Anastasio, Bachman, Gaertner, & Dovidio (1996)
	Separate families (biological families) united into one (step families)		Banker & Gaertner (1998)
	Democrats and Republicans, and American		Riek & Gaertner (2002); Riek, Mania, Gartner, McDonald & Lamoreaux (2010)
Dual identity not associated with intergroup bias	Multi-ethnic school classrooms	Nested self-categories	Houlette, Gaertner, Johnson,Banker, Blake& Riek (2004)

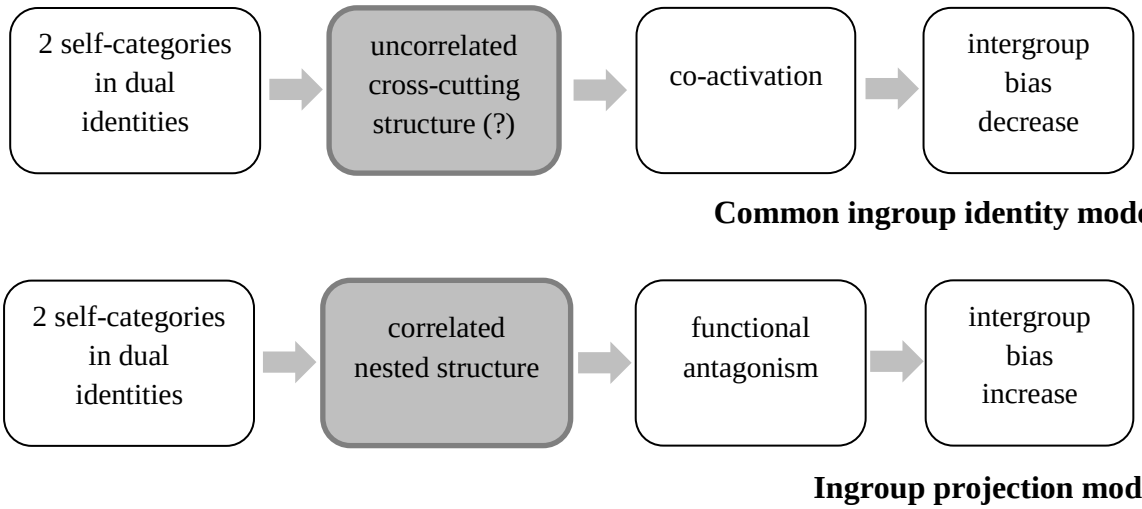
To explain the effects of dual identities on intergroup bias the common ingroup identity model and the ingroup projection model propose two different mechanisms. These mechanisms establish the relation between dual identities (or the social identity salient in a particular moment in the case no dual identity is possible) and the evaluation of ingroup and

outgroup. These mechanisms are not alternatives to co-activation and functional antagonism. Co-activation and functional antagonism are hypothesised to describe the dynamics between the two self-categories in dual identities and it is argued that these dynamics moderate the effect of dual identities on intergroup bias. Thus, co-activation or functional antagonism between self-categories might change the process that mediates the effect of dual identities on intergroup bias; it is this mediating process that is described in the common ingroup identity and ingroup projection models. For a better understanding of these connections we will briefly describe the mechanisms proposed by the two models. The common ingroup identity model emphasizes the process of *recategorization*; this process enables group members to focus on a category at a higher order of abstraction (i.e., common category or superordinate category) that includes both subgroups, instead of considering only ingroup versus outgroup differentiation. Based on the idea that people favour the groups they belong to, the common ingroup identity model posits that subgroup members will favour the common group and will generalize the positive view of it to (former) outgroup members who share it. This will reduce intergroup bias. According to common ingroup identity model, recategorization can be achieved in two ways: a singular common group identity (i.e., subgroup identity is totally forsaken in favour of the common identity), or a dual identity (i.e., common group identity is promoted while simultaneously maintaining the subgroup identities) (Dovidio, Gaertner, & Saguy, 2009; Nier, Gaertner, Dovidio, Banker, Ward, & Rust, 2001).The ingroup projection model (Mummendey & Wenzel, 1999) considers the process of *ingroup projection*. The authors' claim is that the superordinate category is represented in terms of an ideal member or prototype that group members take as the norm and since groups are included in this superordinate category they can compare to each other regarding this norm. The superordinate category provides a frame of reference for comparisons. Group members will be in competition within the superordinate categories: they will generalize their distinctive group attributes to the superordinate category, claiming their ingroup to be more prototypic. Therefore people will keep favouring their ingroup relative to the outgroup even, or especially, when a common category is introduced.

The association between results and the structure and the correlation of self-categories in dual identities shows that dual identities with correlated and nested self-categories do not reduce intergroup bias (as predicted by the ingroup projection model), whereas dual identities with uncorrelated cross-cutting self-categories do (as predicted by the common ingroup identity model). According to our assumptions about co-activation and functional antagonism,

we advance that co-activation allows bias reduction whereas functional antagonism does not. Following this reasoning there is a cognitive mechanism for each of the different links between self-categories in dual identities with different effects on intergroup bias (see Figure 4). Whether we should consider that dual identities with uncorrelated and non-nested self-categories are really dual identities is discussed at the end of this thesis.

Figure 5. Different correlations and structures between self-categories in dual identities; implications in cognitive functioning and intergroup bias.



CHAPTER IV

Hypotheses and Empirical Evidence

Hypotheses

With the current research we intend to give an answer to the question: *Can subgroup and superordinate self-categories be simultaneously salient?* Based on the data and theories presented in the former chapters we propose the following general hypothesis: that the likelihood of simultaneous activation of a subgroup and a superordinate category depends on whether the superordinate category is functioning as framework for subgroup comparisons. With respect to comparisons we make the distinction between *superordinate categories that are relevant for intergroup comparisons* and *superordinate categories that are non-relevant for intergroup comparisons* (Dovidio, Gaertner & Saguy, 2007; Hall & Crisp, 2005; Meiser, Mummendey & Waldzus, 2004; Wenzel, Mummendey, & Waldzus, 2007). The superordinate category functions as framework for subgroup comparisons when (1) perceivers engage in doing comparisons between the ingroup or self-category and other groups, (2) the superordinate category is relevant for these subgroup comparisons; that is to say,superordinate categories can be relevant or non-relevant according to the comparisons in which people engage against their subgroup. When the superordinate category is relevant it can function as the framework for the comparison between groups and these comparisons will inhibit its activation due to the principle of functional antagonism. When a superordinate category is not relevant for the comparisons activation will not be inhibited, so simultaneous activation of the two self-categories (subgroup and superordinate) is possible. The activation of the subgroup identity will spread along the memory network and related categories will be co-activated. In summary, in situations of subgroup differentiation where dual identities include a relevant superordinate category, we expect that the two self-categories, subgroup and superordinate are not simultaneously salient.

Overview of Experiments with Methodological Note 1

In four experiments we tested the simultaneous salience of subgroup categories and comparison relevant versus comparison non-relevant superordinate categories using response times (RT) in a lexical decision task (LDT; Wittenbrink, Judd & Park, 1997). We activated categorization as football team supporter, Benfica and Sporting(two well-known football teams of Lisbon) and words related to superordinate categories that always nested these two subgroups, being either comparison relevant or comparison non-relevant.

To design our experiments we explored the idea that the various levels of self-categorization are organised in a cognitive network (e.g., Smith, Coats & Wallin, 1999). In the same way that connectionists' views on memory propose the use of concepts as associations between the information within these concepts (Collins & Quilliam, 1969; Anderson & Bower, 1973), it is also possible to represent social identity as a memory network of associated self-categorizations. We considered two basic principles: (1) that "chunks" or pieces of information about social identity correspond to elements of self-categorizations that are associated in memory; (2) that due to these associations, cognitive processes such as activation or inhibition, acting upon one of the self-categorizations have an effect on the other parts that are associated. In the case of dual identities we would think of the subgroup and the superordinate category as chunks of information that are associated so that the activation of one affects the activation of the other. In the case of our studies, self-categorization in one of the football team-fans group Benfica or Sporting will be connected to superordinate categorization such as football supporters. As our purpose is to test the psychological possibility of dual identities, which would correspond to the simultaneous salience of two associated elements of the same network (Benfica supporters and football supporters), we measured the response latencies to a superordinate self-category when the subgroup categorization was already salient to operationalise the concept of dual identity.

A LDT is generally part of a response latency paradigm. It is designed to capture spontaneous responses to stimuli in the environment by measuring the response latencies after the stimuli are presented. It involves asking people to classify as "words" or "non-words" a sequence of stimuli that can be a set of disorganised letters (e.g., abtel) or a set of letters forming a word (e.g., table). The response latencies to each stimulus are interpreted as measures of the cognitive accessibility of the representation of stimuli and its associated parts (Bargh & Chartrand, 2000). Accessibility accounts for the probability of a representation to

be remembered or used and it is a proxy for salience (Higgins & King, 1981; Wyer &Srull, 1981). Short latencies (i.e., words classified faster) are generally considered to indicate higher accessibility than long latencies (i.e., words classified slower). Researchers in psychology use this task to differentiate between words that perceivers can easily access to the ones they can access with difficulty in a certain task or situation. Therefore, usually very specific types of words are presented as stimuli; researchers select the set of words following a criterion in line with the variables they are testing and that they consider to influence accessibility. The type of words can already have an effect on accessibility being some words generally more accessible than others, for example, familiar words versus uncommon words. With this procedure we could for instance measure the accessibility of positive and negative words by generating three lists of stimuli, one of positive words another of negative words and a third one for their corresponding non-words (e.g., Algarabel, 1996; Garcia-Marques, 2003; Russel, Weiss, & Mendelsohn, 1989) . Then we would present the stimuli to participants in an arbitrary order and measure how fast they would classify each stimulus as word or non-word. We might find a main effect of positive words, for instance that responses to positive words would in average be faster than to negative words. More interestingly, we could also vary the situation in which the lists where presented and find a qualified effect of the situation. For instance, making participants watch a funny video before the LDT may enhance the effect of positive words (vs. watching no video). In contrast, making them watch a sad video might decrease or reverse the effect of positive words (i.e. positive words might become less accessible, perhaps even less accessible than negative words).

A very interesting use of the LDT is the one of testing the connections between elements or concepts in memory (associative network theory, see Anderson & Bower, 1973; Srull, 1981). Finding that the presentation of certain word-stimuli implies faster lexical decision response to other specific target-words supports the idea that in memory information is interconnected and that the activation of one part can spread to the connected elements (see Co-activation hypothesis, Chapter 3). The associative network models were originally proposed to understand knowledge based on propositions, that is, knowledge based on the relationship, for instance, between a subject and a predicate in the sense of sentence construction (see Anderson, 1985). The predicate *steeling* would fast bring the subject *thief* into memory. Therefore the terms *semantic* or *propositional networks* are two names used to identify network models. Elements in a proposition are represented as nodes for concepts, and they form together a proposition through links or associations. Meyer and Schvaneveldt

(1971) as well as Neely (1976) used this procedure to test semantically associated words, such as bread-butter. Later, network models were applied to the representation of other psychological phenomena (e.g., attitudes; see Ostromm, 1987, 1988; Eagly & Chaiken, 1993; affect and emotion; see Bower, 1981). Researchers used this technique to test the association between elements that belong to the domain of representations of social knowledge (e.g., Wittenbrink, Judd & Park, 1997; Perdue, Gurtman, Dovidio & Tayler, 1990).For instance Wittenbrink, Judd and Park (1997) observed the connection between the elements in a stereotypic representation of racial groups (Black and White primes paired with stereotypical traits of both groups).Also Devos and Banaji (2005) found that the subcategories African American, Asian American and White American are all associated to the superordinate concept of American and that the connection with White American is stronger (see Chapter 3, p..). Biachi, Mummendey, Steffens and Yzerbyt (2010) showed that there is a close connection between the information about superordinate categories and the traits associated to the self and self-categories. In a LDT Bianchi et al. found faster response latencies to ingroup traits than to outgroup traits after priming a relevant superordinate category.

This way of treating social representations in an associative network suggests that information in social identity can also be understood in a network form. Moreover, the conception of social categorizations in social identity in a hierarchical structure is also in accordance with these models: the hierarchical representation of self-categories in SCT brings many interconnected levels to the representation of social identity (see Chapter 1) that resemble the interconnections of elements in a network model. Assuming self-categories to be organized in a hierarchical structure (see Rosch, 1978) and that there are associated concepts that are connected at least in terms of class inclusion allows understanding social identity in terms of an associative model (see J. R. Anderson, 1983, 1985; J. R. Anderson & Bower, 1974; Bower, 1981; A.M. Collins & Quillian, 1969). By considering the organization of information in social identity as a network we can apply the principles of memory organization and the techniques to study memory, such as LDT, to the study of self-categorization. When thinking about social identity as a network we can assume that the associative processes in memory (as for example co-activation and inhibition) will mediate the effects of social identity in responses to social situations. This produces important insights for the explanation and test of dual identities. Since dual identities are a part of social identity and the organization of the information in social identity is regarded as being in memory-network we can assume that the links that connects the two categorizations in dual identities

will be submitted to memory principles and processes. Thereby effects of dual identities can be explained taking into consideration memory-processes.

Both things considered: (1) that the LDT is an appropriate technique to test the organization of information in a network and (2) that the elements of social identity (self-categorizations) can be fitted into a network model, we decided to use LDT to access the salience of the superordinate category as a test of the possibility of dual identities. We assumed that two nested self-categories, as the ones forming dual identities, would be interconnected in a network, so activating one would affect the salience of the other. In the first experiment we asked participants about their subgroup identity at the beginning of the experiment to make this self-categorization salient and then measured the salience of different superordinate categories with the LDT. We expected that response times to target words related to non-relevant superordinate categories were faster than to target words related to relevant superordinate categories. The reasoning behind this prediction is that any intergroup context can be framed with reference to several superordinate categories (e.g., Black and White ethnicities in a School), but only ones correspond to the dimension in which the groups where initially compared (e.g., Black and White are differentiated in terms of human ethnicities). For instance psychology-students and sociology-students in ISCTE-university can be framed as ISCTE students but also as young people. The relevant dimension will be the one on which people have compared to create the groups psychology-students and sociology-students in ISCTE-university, which is more likely to be *ISCTE students*. Response latencies to this latter superordinate category will be longer than response latencies to the superordinate category *young people* because the category *ISCTE students* is inhibited due to functional antagonism. Accordingly, in our experiments response latencies to superordinate categories in which football supporters of Benfica and Sporting are likely to be compared such as football fans, are expected to be longer than response latencies to other superordinate categories.

In the second experiment another method was used to make the subgroup identity salient. Instead of triggering salience of the subgroup identity at the beginning of the study, a conceptual priming task was combined with the LDT in order to test if responses to targets related to relevant versus non-relevant superordinate categories were inhibited more strongly when the subgroup names were presented in part of the trials as primes before the presentation of the target of the word versus non-word judgments. Accordingly, we predicted that after priming the names of the subgroups ingroup-outgroup differences would be

activated leading to slower response times to target words related to relevant superordinate categories– due to functional antagonism - as compared to target words related to non-relevant superordinate categories.

In a third experiment we intended to modulate the function of relevant versus non-relevant superordinate categories by manipulating participant's mindset. Participants were induced to engage in comparative versus non-comparative processing modes before judging target stimuli. The relevance for comparison of superordinate categories that could serve as dimension of comparison (labelled as superordinate categories relevant for comparisons or relevant superordinate categories) was thought to be enhanced by comparisons. Therefore, we expected that in a comparative mindset in particular the responses to words associated with relevant superordinate categories would be slower than responses to words associated with non-relevant superordinate categories.

In the fourth experiment we combined objectives and methods of experiment 2 and 3, using the same priming procedure as in Experiment 2 (slightly improved) and a mindset priming task similar to the one in Experiment 3 to induce a comparative mode. We predicted that in the comparative mindset, the slowing down of responses to words associated to relevant (as compared to non-relevant) SC's should be stronger after priming the names of the subgroups. This effect should not occur when the mindset was not comparative.

Methodological Note 2: Football fans' identity

Benfica and Sporting are the two most famous football teams of Lisbon, and for a long time their games were closely followed by all the Portuguese. Football is indeed an important part of Portuguese culture so one can assume that the majority of the people tend to identify with one of these two more than with the other. Not only football fans but many Portuguese show a preference for one of these clubs. Often this preference was transmitted within families so that the majority of people identified with one or the other team, even when watching football was not part of their hobbies. Considering this situation, we choose to work with self-categorization as Benfica and Sporting football fans identity since it was easy to access: it was present in most samples and it could be activated in a fast and simple manner just by using name labels. Hence, Benfica – Sporting categories made sense for all participants in our samples (young students from Lisbon), that is, participants were usually

either in favour of Benfica or in favour of Sporting. The level of identification of participants in our sample, regular students, was generally not so strong for as for hard fans for which football-fan identity is always highly salient. This level of identification was actually positive for our studies because it allowed us to manipulate (prime) the salience of their self-categorization at the beginning of the studies (whereas in the case of devoted-fans this self-categorization was chronically salient).

Empirical Evidence

Experiment 1

The goal of this experiment was to obtain evidence concerning the differential activation of relevant versus non-relevant superordinate categories when subgroup identity is made salient. Participants were football team supporters. We reasoned that for these participants the category defining their favourite team is chronically accessible and easy to activate. After the activation of their subgroup identity we tested the activation of relevant and non-relevant superordinate categories. Based on our theoretical reasoning discussed in Chapters 2 and 3 we hypothesised that when subgroup identity was salient (which was assumed to be the case for all participants), relevant superordinate categories would be less accessible than non-relevant superordinate categories. In this particular experiment we implied that the mere salience of subgroup categories is enough to engage participants to a sufficient degree in intergroup comparison processes to produce the predicted effect. This assumption was based on self-categorization theory's idea that ingroup identity is defined on the basis of the differences between ingroup and outgroup (Turner, Oakes, Haslam & McGarty, 1994), therefore just making the group identity salient would automatically activate the comparisons with the outgroup in memory. Consequently we predicted that participants would react slower to target words related to relevant superordinate categories than to target words related to non-relevant superordinate categories in the LDT.

Method

Pre-study and word stimuli. To obtain significant stimuli for the LDT in the main experiments we conducted a pre-test with 30 team supporters. Participants were supporters of one of the two main football clubs in Lisbon (Portugal), namely Benfica and Sporting. Participants had to respond to 8 questions where they should evoke categories and dimensions

on which the two football team fans were comparable (i.e., target words related to relevant superordinate categories) or were not comparable (target words related to non-relevant superordinate categories). Responses were collected in an interview format (see Appendix A). Based on a content analysis of the responses we obtained an initial list of 40 words evoking categories and dimensions; we selected the 30 of them that were the most frequently cited: 15 relevant (e.g., *"Academia"* – football school, *"Arruaceiros"*- rioters, *"Sócios"* – club members) and 15 non-relevant (e.g., *"Candidatos"* – contenders, *"Desportistas"* – athletes, *"Selecção"* – national team). For each selected word we generated a pronounceable non-word of the same length and using the same letters (e.g., *"Povo"* – people, - *"Vopo"*- epolep). For a full list of the generated words see Appendix B, for the target words selected for the LDT see Appendix C. Given the structure of this pre-study, we assumed that all produced words would be semantically associated to the subgroups, otherwise participants would not come up with them in this particular context. Depending on participants' self-reports, however, they should differ in the degree in which they can (the ones evoking relevant superordinate categories) or do not (the ones evoking non-relevant superordinate categories) play a decisive role in subgroup comparisons.

Participants. Forty male Portuguese participants were recruited at a public university in Lisbon (Age: $M = 22.80$, $SD = 2.34$).

Design and Procedure. In this experiment we used a 3-level within participant factor design (target words: relevant, non-relevant and non-words).The presentation of the stimuli in a LDT and data collection was controlled by the E-prime 2 software (Schneider, Eschman, & Zuccolotto, 2002). Before starting the computer task, participants were asked to indicate their favourite football team, in order to make salient their subgroup identity. During the LDT, participants were presented with several target strings (one in each trial). The target stimuli consisting of words related to either relevant or non-relevant superordinate categories as well as of corresponding non-words were presented in randomized order. Participants' task was to decide as quickly and as accurately as possible whether the displayed target was an existing word or a non-word.

For each trial a fixation point appeared for 500 ms in the center of the screen followed by the target that remained on the screen until the participant responded by pressing one of the two response keys, a left key and a right key (i.e., "s" and "l"). The labels "Word" and "Non Word" were displayed in the top left or right corner of the screen. The letter and their

corresponding response keys were counterbalanced in two blocks; in the first the label "Words" was associated to the "s" key and "Non Word" to the "l" key, in the second the label "Words" was associated to the "l" key and "Non Word" to the "s" key. Each block consisted of 180 trials, the 30 words and 30 non-words being presented three times each in each block. Out of the 30 words, 15 were related to relevant superordinate categories and the other 15 to non-relevant superordinate categories. At the end of the session participants were compensated with a five euro voucher for their effort, debriefed and dismissed.

Results

Following procedures usually employed in research involving LDTs, we prepared the data by excluding from the analysis LDT latencies smaller than 150 ms and larger than 1500 ms (Wittenbrink, Judd & Park, 1997). We submitted participants' response latencies to a 3 (relevant related words versus non relevant related words versus non words) repeated measures GLM. To control the effects of valence the words-stimuli that were evaluated as extremely negative (rioters, instigators, violent and FCP[2]-opponents) were excluded from the analysis. The reason for this was that results without excluding those targets, while supporting the hypothesis, were vulnerable for the alternative explanation that differences in response latencies could be the result of mere valence effects, given that extremely negative target words were not equally distributed across the two categories of relevant vs. non-relevant targets. Nevertheless, results including these problematic targets are reported in Appendix D, and they do not differ qualitatively from the more robust results reported here. Data analysis yielded significant differences between the different types of stimuli, $F(1.55,78) = 26.96$, $p < .001$, $\eta_p^2 = .41$.Mauchly´s test for sphericity was significant $\chi^2(2) = 12.88$, $p < .05$, therefore we used Greenhouse-Geisser correction. The same correction was used in the data presented in the Appendix. As predicted, the RT average for non-relevant was significantly shorter, than for relevant, $t(78) = -3.99$, $p = .001$, $d_{non\ relevant\_relevant} = -12.37$, $SE = 3.04$, 95% CI [-19.74,4.53] (Non-relevant: $M = 460.64$, $SD = 75.81$; Relevant: $M = 472.78$, $SD = 71.04$; Non-words: $M = 492.57$, $SD = 71.14$).

As an alternative analyses, we conducted a 2 (relevant versus non relevant) repeated measures GLM, including the average response times to non-word targets as covariate on the individual level (this way controlling for inter-individual difference in response speed). To

[2] FCP is the acronym for "Futebol Clube do Porto" which is a rival team of both Benfica and Sporting.

reduce multicoliniarity between the factors and the covariate (words and non-words ratings) we centred the covariate by subtracting the mean and dividing the result by the standard deviation. In line with the prior results, the difference in response times between targets related to relevant superordinate categories and those related to non-relevant superordinate categories was significant, $F(1,38) = 16.03$, $p < .001$, $\eta_p^2 = .3$, $t(38) = -4$, $p < .001$, $d_{non\ relevant\_relevant} = -12.14$, $SE = 3.03$, 95% CI [-18.28,-5.99],(Non-relevant: $M = 460.65$, $SD = 75.81$; Relevant: $M = 472.78$, $SD = 71.05$).

Discussion

Experiment 1 showed that participants detected words faster if they were related to the non-relevant superordinate categories than if they were related to relevant superordinate categories. These results support our hypothesis, which assumes the process of co-activation of non-relevant superordinate categories when subgroup identities are salient and of inhibition due to functional antagonism when the superordinate categories relevant for subgroup comparisons. However, it is not possible to tell whether subgroup activation in this study was strong enough to give a fair test of the associative link between subgroups and superordinate categories, because the design of the study did not include a control condition without subgroup identity activation. In our procedure subgroups were made salient for all participants prior to the LDT completion when participants were asked to indicate their football team affiliation. Consequently, we cannot unambiguously argue that the responses speed resulted from the recent use of the subgroup categorization. Also, the differences in response latencies between words related to relevant and non-relevant superordinate categories could be influenced by the valence of these words which was not controlled. Experiment 2 was designed to test more directly the idea that the different functionality of superordinate categories affects their accessibility particularly when the subgroup identity is salient. Moreover we wanted to rule out the possibility that our effect could be driven by differences in valence of the stimuli related to relevant and non-relevant superordinate categories; in the LDT we used only target-words with positive valence.

Experiment 2

In the present study we used a semantic priming procedure (Meyer & Schvaneveldt, 1971; see p. 39) to activate the link between subgroups and superordinate categories in a better controllable way than in Experiment 1. Participants had to perform a LDT similar to the one in Experiment 1, but before each lexical decision they were primed either by presenting a subgroup label or a control prime. The design included two within subjects factors, 3(prime: Benfica, Sporting, neutral) X 3(target words: relevant, non-relevant, non-word). We expected the subgroup primes to facilitate the responses for the target words related to non-relevant superordinate category and to slow down the responses for the target words related to relevant superordinate categories.

Method

Participants. Sixty students from a public university in Lisbon participated in exchange for course credits or 5 euro gift voucher. Thirty-four participants were male and 26 female (Age: $M = 21.47$, $SD = 5.13$).

Word Stimuli. Based on the results of Experiment 1, we selected eight superordinate categories in order to design the LDT. We chose four target words related to non-relevant superordinate categories: *"praticantes"* (someone playing sports-practitioners), *"europeus"* (Europeans), *"equipa"* (team) and *"selecção"* (national team) and four target words related to relevant superordinate categories: *"adeptos"* (supporters), *"elite"*, *"ordeiros"* (orderly) and "*entusiastas"* (enthusiastic people). Thus, only words with positive valence were included in order to rule out valence related alternative explanations. We obtained the valence associated to each of the stimuli used in Experiment 1in a later survey and decided which words to include according to the ratings obtained, thereby keeping valence as equal as possible between relevant superordinate targets and non-relevant superordinate targets.

Procedure. Upon their arrival to the laboratory participants were seated in front of a computer and told to follow carefully the instructions that will appear on the screen. All the trials had the same structure. After the fixation point displaying for 500 ms followed the prime (i.e., "Benfica", "Sporting", "XXXXXXXX") which remained on the screen for 100 ms. The prime was masked for 1000 ms and then substituted by one of the targets (related to relevant superordinate categories, to non-relevant superordinate categories or a non-word). The response keys assignments ("s" and "l") were counterbalanced across two blocks: in the first the label "Words" was associated to the "s" key and "Non Word" to the "l" key, in the

second the label “Words” was associated to the “l” key and “Non Word” to the “s” key. Each block comprised of 96 trials. Each of the sixteen target stimuli (4 related to relevant superordinate categories, 4 related to non-relevant SC and 8 non-words) was presented two times after each of the 3 primes (2 times x 3 primes x 16 targets). The order of the presentation of the 48 possible prime-target combinations in each block was randomized by the computer twice.

Results

The same criteria for preparation of the RT data were used as in Experiment 1. The RTs to items following a group prime (Benfica and Sporting) were analysed together in a composite score. Composite scores were the average latencies to all target words after both group primes; separately for relevant stimuli, non-relevant stimuli and non-words. RTs (relevant vs. non-relevant vs. non-words scores) after group priming were compared to latencies to the same items after the neutral prime (XXXXX). RT differences were examined in a repeated measures GLM with the type of target stimulus (relevant superordinate categories versus non-relevant versus non words) and the prime (group prime vs. neutral prime) as within participant factors. This analysis yielded a significant main effect of superordinate category relevance, $F(2,118) = 71.58$, $p < .001$, $\eta_p^2 = .55$, $t(118) = 6.03$, $p < .001$, $d_{relevant\_non\ relevant} = 31.74$, $SE = 5.26$, 95% CI [18.78,44.70],(Non-relevant: $M = 552.34$, $SD = 10.15$; Relevant: $M = 584.08$, $SD = 89.40$; Non-words: $M = 621.45$, $SD = 91.52$), sphericity assumed, $\chi 2$ (2) = 1.81, $p = .41$. We found no interaction between prime and target stimuli, $p = .3$. Overall RT means scores are presented in Table 2. Results using non-words as covariate are reported in Appendix E, and they do not differ qualitatively from the ones reported here. Effects were reported assuming sphericity.

Table 2.*Overall Response latencies means scores for Experiment 2*

Experimental conditions: type of target-word X salience of the subgroup identity by priming	*Mean*	*Std. Deviation*	95% Confidence Interval	
			Lower Bound	Upper Bound
Relevant word-stimuli after Prime	588.14	94.06	563.84	612.43
Relevant word-stimuli after Control	580.03	93.00	556	604.05
Non-Relevant word-stimuli after_Prime	554.93	83.26	533.43	576.44
Non-Relevant word-stimuli after Control	549.75	82.06	528.55	570.95
Non-Words word-stimuli after Prime	619.69	90.44	596.33	643.06
Non-Words word-stimuli after Control	623.21	98.57	597.75	648.67

To sum up, non-relevant superordinate categories were recognized faster than relevant superordinate category irrespectively of the nature of the prime.

Discussion

Results replicated findings of Experiment 1. They are suggestive of excitatory and inhibitory processes in the dual identification phenomenon: superordinate categories were either co-activated (shorter response latencies) or inhibited (longer response latencies). The result is consistent with the proposed idea that simultaneous salience of self-categories is a function of their relevance for subgroup comparisons. More precisely, the functional antagonism hypothesis is supported by differences in reactivity to the two types of superordinate categories in use. However, we did not find the predicted priming effect. That is, results suggest that priming subgroup identities did not increase the differences in the salience of the two types of superordinate categories; the presentation of the subgroup primes did not consistently create faster responses to words associated to non-relevant superordinate categories (facilitation effect). However the lack of effects of the prime can be due to the amount of time between the prime presentation and the target presentation. Long delays, 1000 ms, can make responses conscious but also diminish the facilitation effect of the prime. In

experiment 4 we replicated the priming procedure with a shorter delay between prime and target.

In experiments 1 and 2 we assumed that as soon as the subgroup categories were activated, participants would engage in intergroup comparison processes without direct evidence. Experiments 3 and 4 were conducted with the aim of explicitly manipulating the intensity of intergroup comparisons by priming a comparison mindset. We expected that if comparison was the critical factor for simultaneous salience of nested categories, inhibition would occur with higher probability when all the conditions for intergroup comparison were provided (i.e. a relevant comparison framework and a comparison mindset). In other circumstances, when no comparative framework was present, or if an alternative, non-comparison mindset was active, functional antagonism would be unlikely so that subgroups and superordinate categories might be salient at the same time independent of their potential comparison-relevance, allowing dual identity to occur.

Experiment 3

In experiment 3, participants' mindset was manipulated to control how much of an intergroup comparison process was triggered. We used the same intergroup context as in the previous studies, that is, Benfica and Sporting as subgroups with several relevant versus non-relevant superordinate categories. Participants had to perform a LDT similar to the ones used in the first two studies. However, before the LDT they were primed with a subgroup comparison mindset versus two control conditions, one was a subgroup categorization condition and the other one was a simple categorization task. In a mindset prime, a specific way of thinking such as comparison is made active through a task, which then is likely to be used later, in a different situation (Bargh & Chartrand, 2000).In this study the design was a 3(Mind-set condition: comparison, control 1, control 2; between subjects) by 3(target words: relevant, non-relevant, non-words; within-subjects). Consistent with the functional antagonism hypothesis, we expected that in the comparison, condition relevant superordinate categories would be less accessible than non-relevant superordinate categories while both kinds of superordinate categories should be equally accessible in the two control conditions. We assumed that both relevant and non-relevant superordinate categories were equally strongly associated to subgroup categories forming part of the identity network in memory. Longer reaction times for words related to relevant superordinate categories in the comparison

condition would be caused by inhibition due to functional antagonism regarding relevant superordinate categories. . To exclude other possible explanations, we controlled target valence and familiarity statistically. Therefore participants had to rate all target words in terms of valence and familiarity at the end of the experiment.

Method

Participants. Fifty-three undergraduate male students of a public university in Lisbon took part in this experiment (Age: $M = 21.97$, $SD = 2.81$).

Procedure. Participants were seated in front of a laptop. The session comprised two phases. During the first one, the mindset manipulation was induced. To prime a comparison mindset, participants were asked to perform several comparative judgments regarding the position of each group of football team supporters (i.e., Benfica and Sporting) on several dimensions (*cohesive, exhibitionist, enthusiasts, successful, yearning, optimistic, young, arrogant, and tolerant of defeat*; see Appendix F). In control condition 1, the subgroup categorization condition, participants had to decide the team membership (i.e., Benfica or Sporting) of twelve well known football players as well as to indicate their field position. In control condition 2, simple categorization, participants had to classify twelve pictures of objects as football related versus football unrelated. The rationale behind the choice of these control conditions was to understand whether comparison was a critical factor for the inhibition of relevant superordinate categories, or if the mere exercise of categorization in subgroups in control 1 would generate a similar effect; control condition 2 was thought to be the equivalent to a categorization task but without the activation of the subgroup identity.

A LDT identical to the one in Experiment 1 one followed the mindset priming. We used 15 relevant-related words and 15 non-relevant-related words and their corresponding non-words as target stimuli. At the conclusion of the sessions participants were asked to rate the valence of all target words on a scale from 1 to 7 (not pleasant; very pleasant) and then to rate the familiarity of each target word on a 1 to 7 scale (not familiar; very familiar), finally their socio-demographic data were collected. The ratings of valence and familiarity of all target words were aggregated across stimuli, that is, separately for words associated to relevant superordinate categories, non-relevant superordinate categories and non-words (e.g., “valence of relevant-words”; “familiarity of relevant words”; etc.).

Results

Data were prepared for analysis in the same manner as in Experiment 1 and 2. RT differences between conditions were examined in a 3 x 3 GLM, the type of stimulus (relevant versus non-relevant versus non words) was the within-subject factor, the mindset condition (comparison versus control 1 versus control 2) the between-subjects factor, and the average valence and the average familiarity of targets of each type of target stimulus (relevant, non-relevant and non-words) were included in the model as covariates.

Table 3.*Overall Response latencies scores for Experiment 3*

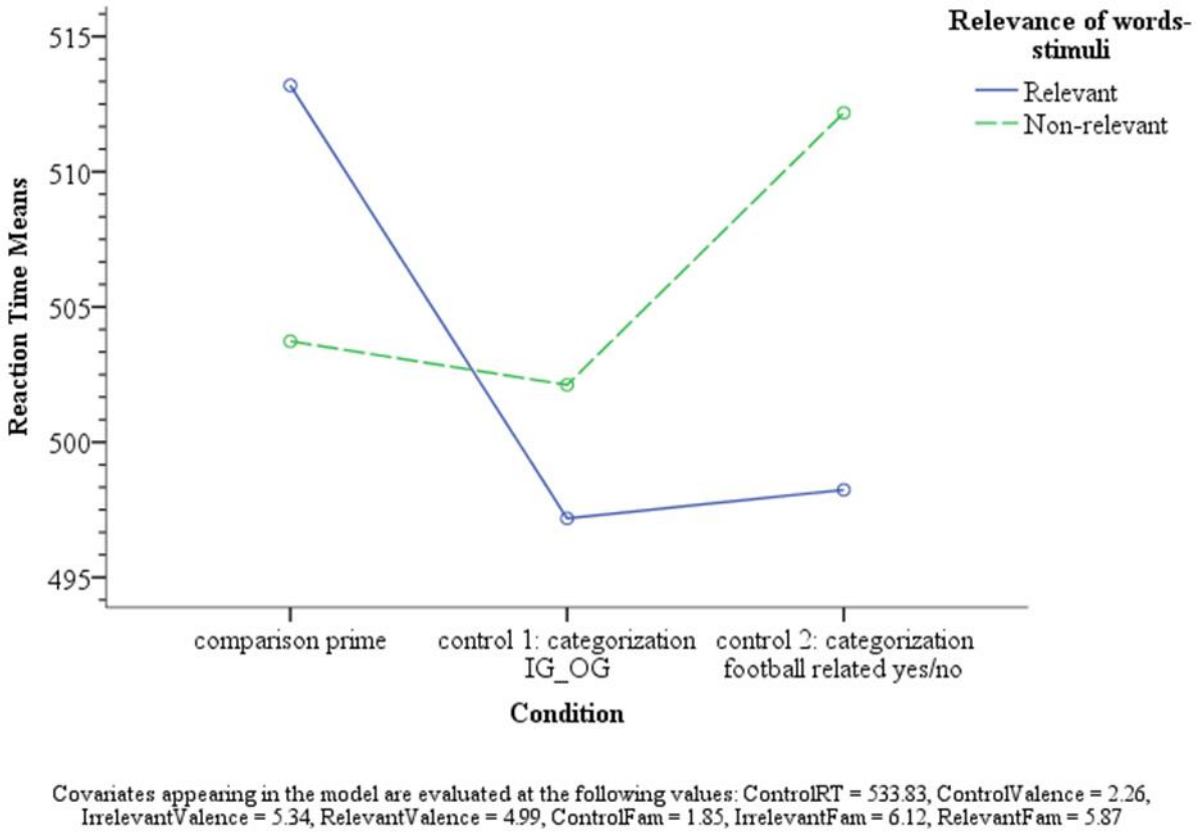
Condition	Relevance of word-stimuli	*Mean*	*Std. Error*	95% Confidence Interval	
				Lower Bound	Upper Bound
Comparison prime	Relevant	515.45	13.97	487.30	543.59
	Non-relevant	506.19	14.57	476.84	535.55
	Non-words	536.74	16.32	503.84	569.64
Control 1: categorization IG_OG	Relevant	500.52	14.36	471.58	529.45
	Non-relevant	505.76	14.97	475.59	535.94
	Non-words	538.14	16.78	504.31	571.96
Control 2:categorization football related yes/no	Relevant	492.32	14.25	463.61	521.03
	Non-relevant	505.71	14.86	475.77	535.66
	Non-words	526.20	16.65	492.64	559.76

Covariates appearing in the model are evaluated at the following values: ControlValence = 2.26, IrrelevantValence = 5.34, RelevantValence = 4.99, ControlFam = 1.85, IrrelevantFam = 6.12, RelevantFam = 5.88.

The effect of relevance was significant, F (1.63,88) = 3.39, p = .05, η_p^2 = .07 (As there was a violation of the sphericity assumption (χ2 (2) =11.16, p < .00), we used the Greenhouse-Geisser correction). This effect was qualified by "condition": the predicted interaction between type of stimulus and the condition approached significance, F(3.26, 88) = 2.40, p = .07, η_p^2 = .098(see Figure 6). Simple mean comparisons indicated that in the comparison condition participant's RT to words related to relevant superordinate categories where longer than RT the ones related to non-relevant superordinate categories but not

significantly, $t(88)= 1.92$, $p = .17$, $d_{relevant\_non\ relevant}= 9.25$, $SE = 4.80$, 95% CI [-2.66, 21.17] (Non-relevant: $M = 506.19$, $SD = 54.06$; Relevant: $M = 515.45$, $SD = 59.96$, Non-words: $M = 536.74$, $SD = 61.20$). The interaction and the pairwise comparison between relevant and non-relevant words reached significance when non-words were used as covariate. These results are reported in Appendix G. We found no differences between the types of stimuli in control condition 1, the social categorization condition. However targets related to relevant superordinate categories elicited even faster RTs than targets related to non-relevant superordinate categories in control condition 2, the simple categorization condition, $t(88) = 2.74$, $p = .001$, $d_{relevant\_non\ relevant}=-13.39$, $SE =4.89$, 95% CI [1.24, 25.55] (Non-relevant: $M = 505.71$, $SD = 64.01$; Relevant: $M = 492.32$, $SD = 56.49$, Non-words: $M = 526.2$, $SD = 77.44$).

Figure 6. Estimated marginal means of reaction times for relevant and non-relevant word-stimuli in the 3 conditions in Experiment 3



Additionally to the results reported here, results without using familiarity and valence as covariates are reported in Appendix H.

Discussion

As predicted, the experimental manipulation moderated the effect of subgroup activation on RT to relevant and non-relevant superordinate categories. Participants responded faster to non-relevant than to relevant superordinate categories when a comparison mindset was primed, but not when a different mindset was primed (interaction marginally significant). This result suggests that the functional antagonism hypothesis applies indeed to relevant superordinate categories in situations where group members engage in comparison processes. One unexpected result was that relevant superordinate categories seem to have become more accessible than non-relevant ones when stimuli had to be judged for their association with the overall context (football) in the mindset prime. One explanation can be that relevant superordinate categories might be more strongly associated to the football domain than non-relevant superordinate categories and that the task used in the simple categorization condition activated the entire football related semantic network. In any case, the unexpected reversed effect in control condition 2 does not undermine the support found in this study for our main hypotheses.

Differences in valence and familiarity of the target words do not undermine the interpretation of our findings either. On the contrary, these results were important to understanding the role of valence and familiarity in our results. Without controlling the effects of these variables (see Appendix G), the interaction between the mindset manipulation and the type of target word did not appear. Hence we consider that, rather than driving our results by increasing the reported differences between relevant and non-relevant superordinate categories, these variables work in the opposite direction to our factors.

Although Experiment 3 went beyond Experiment 1 because it showed the limitation of the functional antagonism principle to conditions of subgroup comparisons, it shares with Experiment 1 the limitation that there was no control of the actual salience of the subgroup identity. Experiment 2 had tried to address this limitation, but was not conclusive in this regard. Therefore, Experiment 4 was designed to address both research questions, the moderation by comparison mindset and the importance of subgroup identity salience, at the same time.

Experiment 4

As in Experiment 3 we manipulated comparison with a mindset priming task. Additionally we manipulated activation of the subgroup identity by using a priming procedure identical to the one in experiment 2 but with shorter delay between prime and target.

First, participants' mindset was manipulated to test the moderating role of the salience of intergroup comparison. That is, either an intergroup comparison mindset was primed or not. In order to control for a possible confounding of comparison mindset with subgroup-identity salience (as salient subgroup comparisons imply subgroup identity salience), we included this time a control-condition in which a simple subgroup identity salience mindset was triggered without inducing comparisons and a second control condition in which neither subgroup comparison, nor subgroup identity was made salient (Mindset-condition: comparison versus Control 1 versus Control 2; between subjects). Then all participants had to respond to the same LDT as in the previous experiments. We recorded response times (RT) for word/non-word judgments when targets related to relevant versus non relevant superordinate categories were presented (target-factor: relevant superordinate categories vs. non-relevant superordinate categories vs. non-words; within-subject). Before each presentation of a target word, participants were primed with the presentation of either the name of their favourite football team or its principal rival (i.e., Benfica or Sporting), or a neutral prime (prime-factor: ingroup vs. outgroup vs. neutral; within-subject). The experiment had a 3 (Mindset-condition: comparison versus Control 1 versus Control 2) x 3 (Benfica vs. Sporting vs. Control) x 3(relevant vs. non-relevant vs. non-words) design.

Consistent with the functional antagonism hypothesis we expected that in the comparison condition relevant superordinate categories would be less accessible than non-relevant superordinate categories particularly after the subgroup primes. Thus, we predicted that participants in the comparison condition would react slower to relevant superordinate category target words than to non-relevant superordinate category target words during the LDT, and that this effect would be stronger after subgroup primes as compared to neutral primes. In the comparison condition the superordinate category was likely to function as a framework for comparisons between the subgroup and the outgroup and therefore be inhibited (see p. 49). In the two control conditions, that is in the simple identity activation condition and in the second control condition (i.e., when no comparison process nor subgroup identity was triggered) we expected relevant superordinate categories after group-prime to be as

accessible as non-relevant ones because both relevant and non-relevant superordinate categories are assumed to be semantically associated to subgroup categories in the same manner.

Table 4. *Hypothesis for the differences between response latencies scores in Experiment 4*

Prime/ Between-group manipulation	**Group-prime**	**Neutral-prime**
Comparison	Relevant(longer)>Non-relevant	Relevant(longer)>Non-relevant
Control 1	Relevant=Non-relevant	
Control 2	Relevant=Non-relevant	

Method

Word stimuli. We use the same stimuli as in Experiment 2, i.e. 4 target words related with non-relevant superordinate categories, 4 target words related with relevant superordinate categories, all with a positive valence, and the corresponding non-word for each.

Participants. Fifty-nine undergraduate students of a public university institute in Lisbon took part in this experiment, 49 were female and 10 were male (Age: M = 20.63, SD = 7.08).

Procedure. Participants were seated in front of a desktop each of them in a separated cubicle. The session comprised three phases: the mindset priming, the LDT combined with subgroup priming and a final phase measuring several control variables. At the beginning of the session participant's socio-demographic data were collected. During the first phase the mindset manipulation was induced. To prime a comparison mindset (comparison condition), participants were asked which of the two main teams in Lisbon they preferred by writing down the name of the respective team (Benfica or Sporting), afterwards they had to perform a comparative judgment regarding the football teams: "Using a scale from 1 to 7, tell us how much is the team you chose better than the other". In the first control condition, the identity salience condition, participants had to make the same choice about their team supporter membership as in the comparison condition but then they were not asked to indicate how much better their team is than the other. Instead, they were asked to estimate the approximate

age of their computer (on a 1 to 7 scale). In the second control condition, participants were neither asked to indicate any team preference, nor to compare the teams but instead had to write down the name of their father and then to estimate the age of their computer as in the first control condition.

Then, in the second phase the task was a sequential priming task combined with a LDT both controlled by the E-prime 2 software (Schneider, Eschman, & Zuccolotto, 2002). All the trials had the following structure: after the display of the fixation point for 500 ms the prime (i.e., "Benfica", "Sporting", "XXXXXXXX") followed and remained on the screen for 100 ms. The prime was masked for 200 ms and then substituted by one of the targets (relevant, non-relevant or a non-word). The response keys' assignments ("s" and "l") were counterbalanced across two blocks. Each block comprised 144 trials. Sixteen target stimuli (4 relevant word, 4 non-relevant words and 8 non-words) were presented three times after each of the primes (3 times x 3 Primes x 16 Targets). The order of presentation of the 48 possible prime-target combinations in each block was randomized by the computer three times. Participants' task was to decide as quickly and as accurately as possible whether the displayed target was an existing word or a non-word. Thus, the priming task was exactly the same used in Experiment 2 though the stimuli was repeated 3 times (instead of 2), and with a shorter response delay (200 ms instead of 1000 ms).

At the beginning of the third phase we measured the salience of relevant and non-relevant superordinate categories in two different tasks: in the first one, participants had to write a list of the words they remembered from phase 2; in the second, two longer lists of 16 relevant and 15 non-relevant stimuli were presented, these lists included all the target words used in Experiments 1 and 3 (see Appendix C); participants had to decide whether these words could be included in phase 2 ("please tell us which of these words would make sense to be included in the prior task") using a rating scale from 1 to 7 ("not fitting at all", "completely fitting"). The list of relevant stimuli contained 16 items that is one word more than the list of non-relevant stimuli, because we included both the word *"arruaceiros"* with a negative valence, and its positive equivalent *"ordeiros"* (see Experiment 2). We expected that in the condition where relevant superordinate categories had been suppressed by the manipulation (i.e., in the comparison condition), the words related to relevant categories would be less accessible (unlikely to be recalled and recognized as fitting in the task). With these tasks we intended to check whether relevant superordinate categories were less salient than non-relevant.

Results

We prepared the data as in the previous experiments by excluding from the analysis LDT response latencies smaller than 150 ms and larger than 1500 (Wittenbrink, Judd & Park, 1997). RTs after group priming (relevant vs. non-relevant scores) were compared to latencies to the same type of items after the neutral prime (XXXXX). Because the two primes (Benfica and Sporting) both activated the subgroup identity we aggregated the scores across the two and compared them to the neutral prime. RT differences were examined in a 3 x 2 x 2 GLM with the mindset manipulation as between factor and type of target stimulus (relevant versus non-relevant versus non words) and the prime (group prime vs. neutral prime) as within factors. We excluded from the analysis the wrong responses (i.e., identifying a word as non-word or the opposite). This analysis yielded a significant main effect of superordinate category relevance, $F(2,112) = 61.45$, $p < .001$, $\eta_p^2 = .74$, sphericity assumed χ^2 (2) = 4.39, p = .11. Simple comparisons indicated a significant difference in RT between all three types of targets (Relevant: $M = 593.79$ $SD = 85.37$, Non-relevant: $M = 565.89$, $SD = 76.30$, Control: $M = 618.12$, $SD = 80.84$; see Table 3).

Table 5.*Pairwise comparisons for the levels of the main effect of the relevance factor*

Relevant words versus NonRelevantwords	$d = 27.898$ $SE = 4.47$	$t(112) = 6.24$ $p = .00$	95% CI [16.88; 38.92]
Relevant words versus Non-words	$d = 24.33$ $SE = 5.32$	$t(112) = 4.56$ $p = .00$	95% CI [-37.47;-11.2]
NonRelevant words versus Non-words	$d = -52.23$ $SE = 4.29$	$t(112) = -12.17$ $p = .00$	95% CI [-62.83;-41.64]

There was a significant main effect of prime $F(1,56) = 7.17$, $p = .01$, $\eta_p^2 = .11$. RT´s after group prime were significantly shorter than after neutral prime, $t(56) = 2.68$, $p = .01$, $d = -10.5$, $SE = 3.92$, 95% CI [-18,34;-2,65] (group-prime: $M = 587.35$ $SD = 80.35$, neutral-prime: $M = 597.85$, $SD = 78.62$). Finally there was a significant interaction between relevance and prime, $F(2,112) = 14.46$, $p < .001$, $\eta_p^2 = .21$, no violation of sphericity $\chi 2$ (2) =4.57, p = .10. Simple comparisons indicated that after group-prime, RT´s to relevant related words were

significantly shorter than RT´s to non-words $t(112) = -7.09$, $p < .001$, $d_{relevant\_nonwords} = -41.51$, $SE = 5.85$, 95% CI [-55.95;-27.07] (Relevant: $M = 582.55$, $SD = 86.20$, Non-words: $M = 623.32$, $SD = 85.27$) and significantly longer than RT´s to non-relevant related words $t(112) = 5.97$, $p < .001$, $d_{relevant\_nonrelevant} = 27.09$, $SE = 4.54$, 95% CI [15.89, 38.28] (Non-relevant: $M = 555.46$, $SD = 80.84$). When the prime was neutral, RT´s to relevant related words were not different from the ones to non-words, $t(112) = -1.02$, $p = .94$, $d_{relevant\_nonwords} = -7.16$, $SE = 7.02$ (Relevant: $M = 605.03$, $SD = 91.46$, Non-words: $M = 612.19$, $SD = 80.71$), and they were longer than RT´s to non-relevant related words $t(112) = 4.02$, $p < .001$, $d_{relevant\_nonrelevant} = 28.71$, $SE = 7.15$(Non-relevant: $M = 576.32$, $SD = 78.04$).

Regarding our hypothesis: the analysis yielded a marginal interaction between the three factors, condition, relevance and prime, $F(4,112) = 2.19$, $p = .07$, $\eta_p^2 = .07$. As expected simple comparisons indicated that in the comparison condition after the group was primed RT´s to targets related to relevant superordinate categories were longer than RT´s to non-relevant superordinate categories, $t(112) = 5.54$, $p = .00$, $d = 44.28$, $SE = 7.99$, 95% CI [24.57,63.99] (see Figure 7). In this condition RT to relevant related targets just differ marginally from those to non-words $t(112) = -2.40$, $p = .06$, $d_{relevant\_nowords} = -24.76$, $SE = 10.3$, 95% CI [-50.18,.66]. They remain at the base level of activation. Both in control condition 1 (identity salience) and in control condition 2, RT to relevant related targets after group prime where faster than RT to non-words and just marginally different from non-relevant related words (Control 1: $t(112) = 4.37$, $p = < .001$, $d_{relevant\_non\text{-}words} = -42.78$, $SE = 9.79$, 95% CI [-66.96, -18.60]; $t(112) = 2.32$, $p = .07$, $d_{relevant\_non\text{-}relevant} = -17.66$, $SE = 7.6$, 95% CI [-1.08, 36.41]; Control 2: : $t(112) = 5.53$, $p = .00$, $d_{relevant\_non\text{-}words} = -56.98$, $SE = 10.29$, 95% CI [-82.39, -31.56]; $t(112) = 2.42$, $p = .06$, $d_{relevant\_non\text{-}relevant} = 19.32$, $SE = 7.99$, 95% CI [-.39, 39.03]). This indicated that the salience of relevant-related words and non-relevant related words was similar when the comparison was not emphasized by the mind-set. Overall RT estimates are presented in Table 4.

These results were in line with our prediction that the mindset of comparison moderates the effect of the primes on words related to relevant and words related to non-relevant superordinate categories.

Figure 7. Estimated marginal means of reaction times for relevant and non-relevant word-stimuli and non-words after the presentation of group-prime in the 3 conditions in Experiment 4

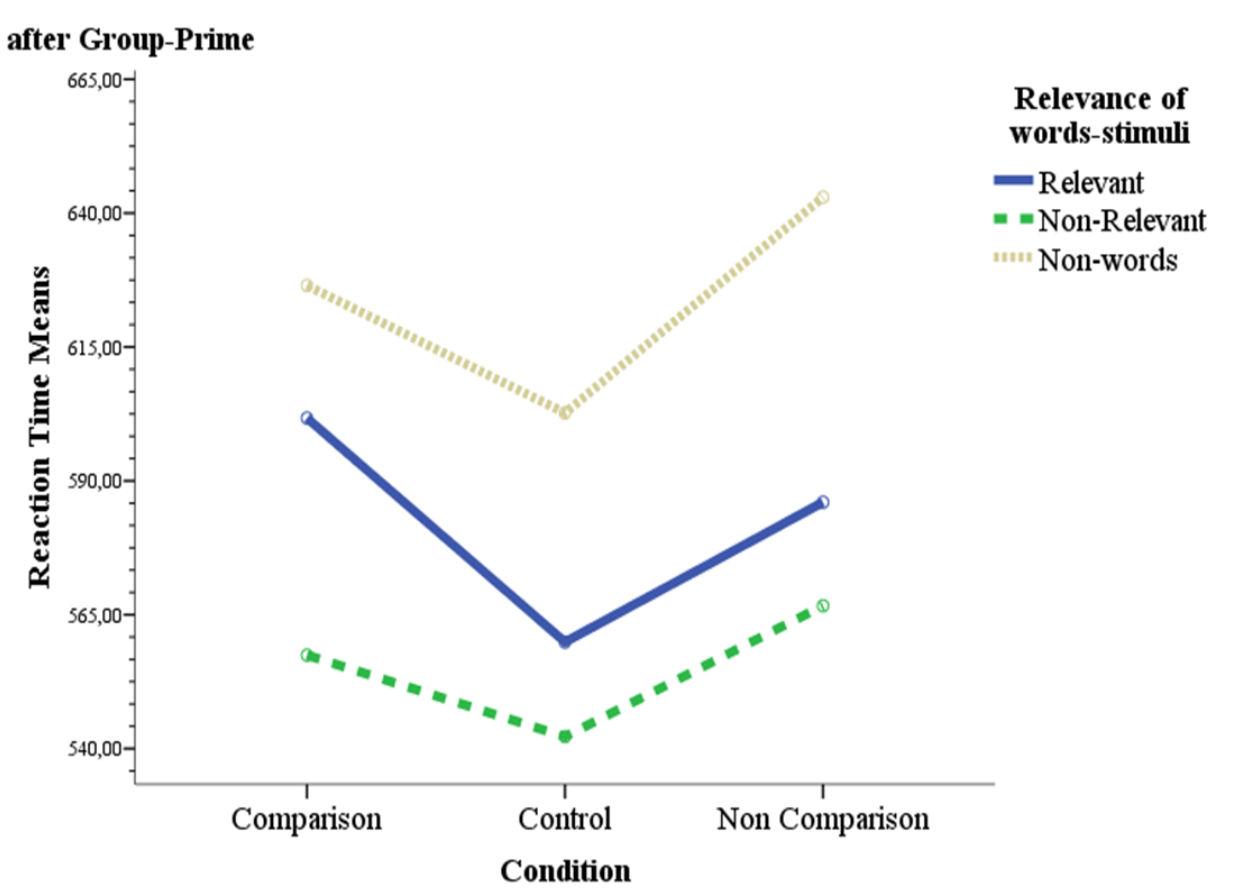


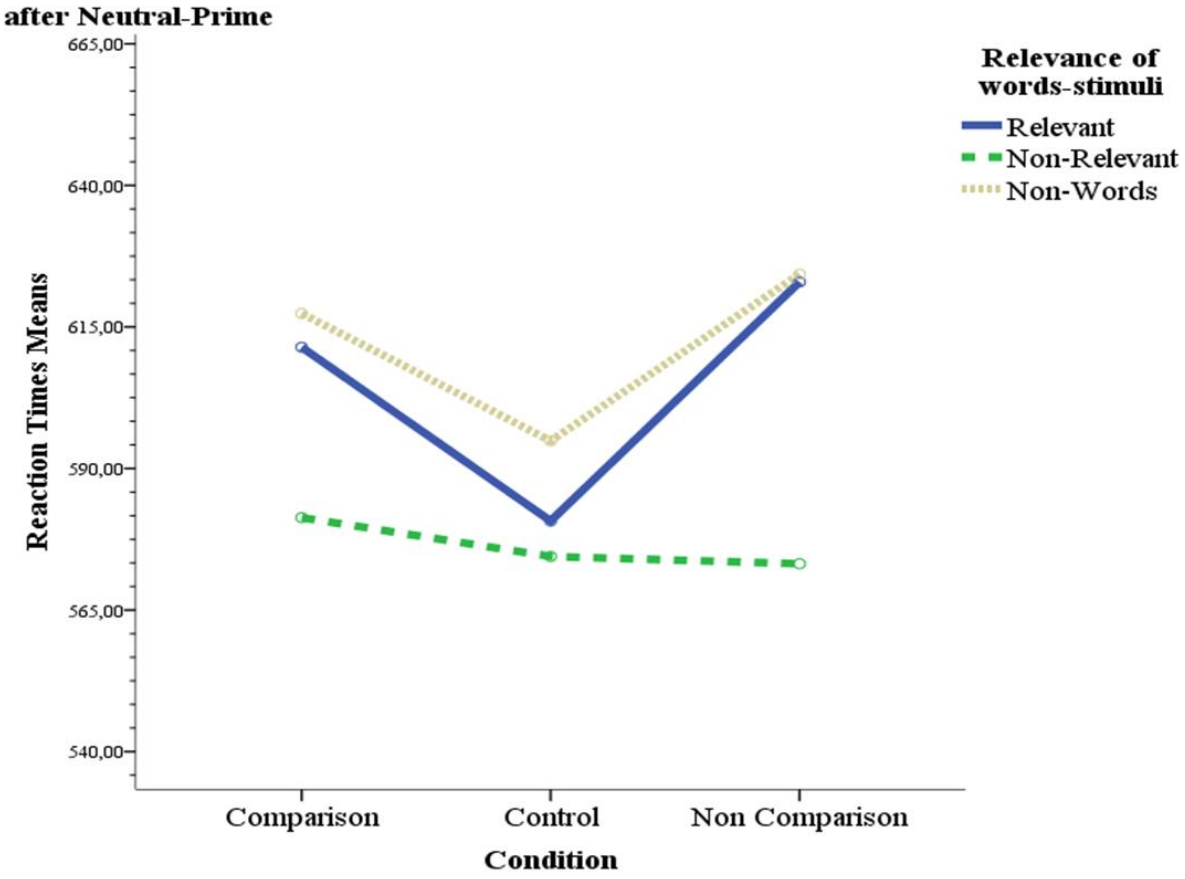
Table 6. *Overall RT Estimates for Experiment 4*

prime	Condition	relevance	*Mean*	*Std. Error*	95% Confidence Interval	
					Lower Bound	Upper Bound
Group	Comparison	Relevant words	601.739	19.703	562.270	641.208
		Non-relevant words	557.456	18.721	519.953	594.958
		Non-words	626.495	19.517	587.398	665.591
	Control 1 (identity salience)	Relevant words	559.893	18.741	522.351	597.436
		Non-relevant words	542.235	17.807	506.563	577.907
		Non-words	602.674	18.564	565.486	639.862
	Control 2 (non-comparison)	Relevant words	586.003	19.703	546.534	625.472
		Non-relevant words	566.684	18.721	529.181	604.186
		Non-words	642.984	19.517	603.887	682.081
Neutral Control	Comparison	Relevant words	611.416	20.928	569.493	653.339
		Non-relevant words	581.319	18.202	544.856	617.782
		Non-words	617.378	18.606	580.107	654.650
	Control 1 (identity salience)	Relevant words	580.731	19.906	540.854	620.608
		Non-relevant words	574.461	17.314	539.778	609.145
		Non-words	594.883	17.697	559.431	630.335
	Control 2 (non-comparison)	Relevant words	622.942	20.928	581.019	664.864
		Non-relevant words	573.181	18.202	536.717	609.644
		Non-words	624.304	18.606	587.032	661.575

In the case of neutral prime, in the comparison condition and the group identification condition (control 1) the differences between relevant and non-relevant related words were not significant (comparison: $t(112) = 2.39$, $p = .06$, $d_{relevant\_non\text{-}relevant} = 30.1$, $SE = 12.59$, 95% CI [-.967,61.160]; control 1: $t(112) = .052$, $p = 1$, $d_{relevant\_non\text{-}relevant} = 6.269$, $SE = 11.97$, 95%

CI [-23.28,35.82]). In addition to the results described for the control conditions (no-comparison) after group-prime, these result shows that without the activation of the subgroup-category (neutral-prime), the salience of relevant-related and non-relevant related words was once again not different. Together the activation of the subgroup and the comparison mindset inhibit the activation of relevant-related words. Surprisingly the difference between relevant and non-relevant related words was significant in the non-comparison condition (control 2); RT to words related to relevant superordinate categories were significantly longer than to non-relevant when the prime was neutral (Control 2: $t(112) = 3.95$, $p = .001$, $d_{relevant\_non\text{-}relevant} = 49.76$, $SE = 12.59$, 95% CI [18.697, 80.824]) (see Figure 8).

Figure 8. Estimated marginal means of reaction times for relevant and non-relevant word-stimuli and non-words after the presentation of neutral-prime in the 3 conditions in Experiment 4



Results using non words as covariant are reported in Appendix I.

As additional evidence we checked the salience of relevant and non-relevant stimuli counting the number of relevant and non-relevant words that participants had remembered from the priming task. We compared these amounts using a GLM with condition (comparison, control 1, control 2) as between-subjects factor and item relevance (relevant vs. non-relevant) as within-subjects factor and non-words as covariate. Differences between factor levels were not significant ($M_{relevant}$ = 0.39, SD = 0.27, $M_{non\text{-}relevant}$ = 0.38, SD = 0.21). The same GLM with condition (comparison, control 1, control 2) as between factor and item relevance (relevant vs. non-relevant) as within subjects factor and non-words as covariate calculated on the reported average fit-scores showed a main effect of relevance $F(1,56)$ = 48.49, $p < .00$; relevance related words were considered to fit less the LDT.

Discussion

Results were in line with the ones of the prior experiments: the experimental manipulation moderated the effect of the prime on RT to target words. In the comparison condition after group-prime RT to relevant related words were significantly longer than to non-relevant words and not different from non-words. In the two control conditions the difference between relevant and non-relevant was just marginally significant after the group-prime. Overall these results show an inhibitory effect of group-prime on the activation of relevant superordinate categories moderated by comparison. This inhibition by subgroup prime occurs when comparison is taking place. The inhibitory effect holds back the activation of the relevant superordinate category resulting from the associative relation with the subgroup. Inhibition was not generalised to recall-memory, as participants remembered an identical number of relevant and non-relevant related words at the end of the task in all conditions.

Regarding the activation of non-relevant related words by the prime; response latencies to target words related to non-relevant superordinate categories were faster after the prime than when no prime was present suggesting an excitatory process working on these categories. Also when subgroup identity was salient (prime) and there was comparison non-relevant superordinate categories were co-activated (shorter response latencies) contrarily to what happened with relevant-related words. In the comparison condition group categorisation and non-relevant related superordinate categories were co-activated. In the non-comparison conditions the difference between relevant and non-relevant target words was just marginally significant after prime, but these two were significantly different from non-words, one can

speculate that the co-activation is possible both for non-relevant and relevant superordinate categories in case people have not engaged in comparisons.

Opposite to our findings in Experiment 2 in this experiment we find the predicted priming effect qualified by relevance. Response latencies after group-prime are shorter than when a neutral prime is presented, although latencies for non-relevant words were always shorter than the ones for relevant-related when the prime was present. This result suggests that priming subgroup identities increases the accessibility of the two types of superordinate categories because they are both associated to the subgroup. The inhibition of words related to relevant superordinate categories is achieved through the combination of subgroup activation and comparison mindset. However such results also confirmed thought that the lack of effects of the prime in Experiment 2 was due to the amount of time between the prime presentation and the target presentation and not due to the lack of effects of subgroup activation.

These data show excitatory and inhibitory processes in the dual identification. Simultaneous salience of self-categories, subgroup and superordinate, is a function of their relevance for subgroup comparisons. The functional antagonism hypothesis is supported by differences in reactivity to the two types of superordinate categories in use. We did not find inhibition under the level of activation of non-words for relevant related words in the comparison condition (response latencies to relevant related words were not longer than to non-words). However the inhibition by group-prime of the activation of relevant superordinate categories moderated by comparison is shown by significantly longer latencies to relevant related words versus those to non-relevant related words in the comparison condition (versus equivalent latencies in the other two conditions). The possibility of a dual identification seems to be dependent on intergroup comparisons.

In this experiment we manipulated explicitly the intensity of intergroup comparisons by priming a comparison mindset as in Experiment 3. As comparison is the critical factor for simultaneous salience of nested categories, inhibition occurred when all the conditions for intergroup comparison were provided. A relevant comparison framework and a comparison mindset were present in the comparison condition after the group was primed. When no comparative framework was present (non-relevant related words), or if an alternative, non-comparison mindset was active, functional antagonism would be unlikely so that subgroups and superordinate categories might be salient at the same time independent of their potential comparison-relevance, allowing dual identity to occur.

CHAPTER V

General Discussion

The representation of social identity has proven to have an explanatory role in various aspects of social psychology particularly those concerning intergroup relations. The ways in which the information in the representation of social identity is connected and used in different situations are fundamental to understanding the changes in intergroup processes. Phenomena such as stereotypes, prejudice and intergroup bias are closely linked to the representation of social identity. Stereotypes for example are explained as the simplification and generalization of the representation of a social group (Brewer, 1988; Fiske & Neuberg, 1990; Hamilton & Scherman, 1994, Medin, 1988; Scherman, 1996). Intergroup bias is dependent on the representation of social identity to the extent that the representation of a situation in terms of ingroup-outgroup duality requires categorization of the self in an ingroup. Since social identity was described by the SCT in 1987, principles of its use, its components and its effects are permanently revised and under discussion (e.g., Turner & Reynolds, 2003). The process of intergroup bias for example has been extensively analysed (Hewstone, Rubin & Willis, 2002).

The activation and salience of self-categories is an essential part of the representation of social identity and it can play a role in the cognitive dynamics of social identity that aims to predict the regulation of intergroup relations (see Hewstone, Rubin & Willins, 2002, p 587-593). The issue of the representation and activation of social identities is of major importance for this thesis since it considers whether the principles of self-categorization pose a cognitive obstacle for dual identities. Furthermore, the possibility of activating two social self-categories was proposed based on the comprehension of self-categorization described in SCT (Dovidio, Gaertner, Hodson, Riek, Johnson & Houlette, 2006; Mummendey & Wenzel, 1999) and was expected to moderate the effects of categorization on bias. Elaborating about the cognitive possibilities of various kinds of social representation is useful for theories working at the level of social relations (e.g., Decategorization Model, Brewer & Miller, 1984, 1988; Crossed Categorization Model, Deschamps & Doise, 1987, Crisp & Hewstone, 2007; Common Ingroup Identity Model, Gaertner & Dovidio, 2000, Gaertner et al. 1993; Mutual Ingroup Differentiation Model, Hewstone, 1996, Hewstone & Brown, 1996; Social Identity Complexity Model, Roccas & Brewer, 2002; Ingroup Projection Model, Mummendey & Wenzel, 1999). These theories predict changes in intergroup situations by altering the

representation of self-categorization. If the cognitive process that can hinder the changes in the representation of self-categories are considered, the prediction of the whether or not these changes in intergroup relations will be more accurate.

In this research we intended to understand the representation of social identity based on the assumptions of the SCT, specifically if one of the principles of self-categorization of SCT, functional antagonism, would interfere with the formation of dual identities. We hypothesised that the likelihood of simultaneous activation of a subgroup and a superordinate self-category would depend on whether the superordinate category was functioning as framework for subgroup comparisons. We proposed that superordinate categories that are relevant for the comparisons between the ingroup and the outgroup will not become salient at the same time as the self-category representing the subgroup. However in the cases where the superordinate category is not relevant for these comparisons, it would become salient allowing the possibility of dual identities. To test these hypotheses we ran 4 experiments. In the First experiment we obtained evidence that making self-categorization salient at the beginning of the study facilitated the salience of target words related to non-relevant superordinate categories (shorter reaction times) and inhibited the salience of target words related to relevant superordinate categories (longer reaction times). We consider this was an evidence of the associative connection between self-categorization at the subgroup level and self-categorization at the subordinated level: once the subgroup categorization was salient, the salience of the words related to the different superordinate categories changed. The relevance of the superordinate level for the comparisons at the subgroup level should be moderating the activation of the words used as target, since the salience of relevant and non-relevant related words was significantly different. However we could not compare these results to the case of "non-salient self-categorization" since we did not have a control condition in the procedure. Therefore in the Second experiment we triggered salience of the subgroup identity with a conceptual/semantic priming task; then we measured the salience of the different superordinate categories with a LDT. The rationale behind this procedure was that we could compare the situation of "salient-categorization" when the prime was showing a subgroup-name, to the "non-salient self-categorization" when the prime was neutral. As in the prior experiment, latencies to words related to relevant superordinate categories were longer than the ones related to non-relevant. However, we did not detect differences between the reaction times after the presentation of a neutral prime and after the group prime. We considered these results as being due to procedural conditions and not to the lack of association between the

self-categories (prime) and the superordinate categories (targets). The delay between the prime and the target word was too long therefore responses to targets related to relevant superordinate categories were not more strongly inhibited due to semantical priming. Regarding this limitation and to test our hypothesis that the different response latencies to relevant and non-relevant words were the result of the comparisons between subgroups at the level of self-categorization, in the Third experiment we manipulated participants' mindset by inducing comparative versus non-comparative processing modes. As expected, the comparative mindset enhanced the inhibition of responses to words associated with relevant superordinate categories. We concluded that this inhibition should be created by subgroup comparisons since the creation of a comparison mindset enhanced it. Again, in Experiment 3 we could not compare our results to the case of self-categorization not being salient, therefore in the Fourth experiment we combined the semantic priming of the subgroup identity to manipulate the salience of the self-categotization with a mindset priming task. We partially confirmed that the inhibition of responses to words associated to relevant superordinate categories was stronger after priming the names of the subgroups when participants had a comparative mindset.

Altogether results partially confirmed our hypothesis. We showed that the salience of a subordinate self-category would create a different activation of a superordinate self-category according to the comparison between subgroups and to the correspondent relevance of the superordinate category for these comparisons. There was a different activation of relevant and non-relevant superordinate categories in Experiments 1 and 2: response latencies related to relevant superordinate categories were slower than to non-relevant. Experiments 3 and 4 completed the explanation of this finding by reinforcing the comparison process that creates the differences in salience between superordinate categories. In Experiment 3 we primed comparisons, and the responses to words related to relevant superordinate categories were slower than the ones to non-relevant superordinate categories in the comparison condition only. This same pattern appeared in results of Experiment 4 but we additionally had evidence of the interaction between the subgroup comparison and salience of the subgroup self-category to achieve this effect. Such results question the possibility of a dual identity in every situation. In line with the assumptions of the SCT, the functional role of the superordinate category in the comparisons for self-categorization is an obstacle for dual identities. Nevertheless our results also indicate that, dual identities can occur in other situations.

We conclude that the simultaneous salience of two self-categories is indeed possible; it is even the case that the superordinate category can be co-activated by the salience of subgroup identity due to spread of activation. However the salience of a superordinate category may also be inhibited when there is a subgroup salient. The comparisons that generally occurs between the ingroup and the outgroup to differentiate the ingroup will, as predicted by SCT's functional antagonism hypothesis and as shown in our studies, inhibit the salience of a superordinate category that is relevant for these comparisons. Thus, functional antagonism is a valid principle regulating self-categories in social identity representation. In that sense, dual identities that contain a subgroup and the superordinate category that was used as criterion to differentiate it from a outgroup are not possible. Nevertheless a dual identity can be created with a superordinate category that is not relevant for the comparisons of the subgroup identity. Whether a superordinate category is relevant or non-relevant for intergroup comparisons depends on the context in which the superordinate category is to become salient. In the domain of football, for fans the category "Nation" can work as non-relevant for the comparisons between fans if football teams are playing to qualify for an international competition. Here football fans of different teams are not likely to compare each other in terms of nation. But the situation changes if their football teams are playing against each other to win the title in the national championship. In this case comparisons are quite certain.

In this thesis we addressed the issue of dual identities from the point of view of the cognitive salience of two self-categorizations. The process of salience is critical for the theories about self-categorization and in particular for the ones based on the social identity approach. Considering that the social identity approach is built on the idea that there are changes in self-categorization (e.g., from the individual to the group level, from the group level to a broader group level) and that those changes explain different behaviours and perceptions; the mechanism through which each of the different self-categories became salient is crucial to make predictions about social identities. The understanding that the salience of social identities is submitted to cognitive rules and, that it is not possible in every situation to have certain self-categories simultaneously salient is likely to be valuable for theories that advocate for manipulating the process of self-categorizations to intervene in the outcomes of social identity. The insight gained about the connections between self-categorizations and functional antagonism in the functioning of self-categories should be taken into account to explain certain findings in social psychology. As for example the contradictory results

obtained from inducing a dual identity in intergroup relations. We considered that the superordinate categories proposed in the studies of dual identity would play different functions in the cognitive process for self-categorization and therefore reach different levels of salience and lead to different results. In the works to test the Common Ingroup Identity Model (Gaertner, Dovidio, Bachmann & Rust, 1993) the change in intergroup bias is thought to be moderated by the change in the representation of self-categorization. If, as in the studies of Gaertner, Rust, Dovidio, Bachmann and Anastasio (1996), the salience of the subgroup self-categorization (self-categorization in terms of ethnicity)is not in contradiction with the co-activation of the superordinate category ("multi-ethnic high school")both self-categories can be salient and the cognitive representation can indeed be changed(see p. 7 and p. 46). Dual identity reduced bias, the two self-categories could be simultaneously salient and the perception of differences between the subgroups can be reduced as proposed by the model. A different process will occur in cases as the one in Anastasio, Bachman, Gaertner and Dovidio (1996) in which the superordinate category had a function in the comparisons of subgroups for self-categorization. In a Bank merging situation as the one in this experiment, the old Bank identities would only make sense as long as compared in terms of the new merging company, the superordinate category. The salience of the subgroup categorization self-categorization is not cognitively compatible with the salience of the superordinate category. Once the subgroup is active the activation of the superordinate category will be cognitively inhibited and therefore the representation from a two-group to a dual identity would not change; the effects of bias reduction would also not take place.

Another contribution of these results is in explaining the process of attributing the characteristics of a self-category to a superordinate category (ingroup projection; Mummendey & Wenzel, 1999). In line with the prior ideas, the cognitive processes in self-categorization will inhibit the activation of a superordinate self-categorization that is functionally necessary for the comparisons between the subgroups. This inhibition is a possible explanation for the finding that the characteristics of the self-category at the subgroup level are also attributed to the superordinate category; if the activation of the superordinate category is inhibited, the specific attributes of this category cannot be accessed and are replaced by the ones of the subgroup. Since in most studies of the Ingroup Projection Model the superordinate category is a reference for comparisons (see pp. 46-47), it is also not salient after the activation of a self-categorization. Based on our results we would suppose that in these studies the changes in the representation towards a dual identity do not occur.

Finally we could see the dominance of one self-category over the other observed in crossed-categorization studies (Urban & Miller, 1998) also as a result of the process for salience in social identity. The use of one single categorization and stereotype instead of the application of several social identities might occur due to the cognitive connections between these self-categories. If the process of self-categorization for one of the categories is based on the comparisons at the level of traits in which the other categories are defined, the activation of these categories can be inhibited. Because these categories do not reach the same level of salience as the first self-categorization, the later will have the stronger impact in the evaluation of the subgroups than the other. Moreover, these categories might not at all be considered since their activation was inhibited due to functional antagonism. The approach to social identity as a cognitive network suggested in this thesis can also increase the explanatory capacity of this concept. Knowing that social identity as a cognitive reality is submitted to cognitive constraints can help to fill some gaps in the understanding of intergroup dynamics and group phenomena. Namely, it clarifies how the perceptions of people as group members (ingroup and outgroup) are pre-settled, based on the self-categorization applied: perceivers access and apply a specific set of information to a situation whereas other related information or categorization is inhibited. It has been shown that the information of one categorization dominates perception (e.g., Bargh, Bond, Lombardi, & Tota, 1986; Devine, 1989; Erber & Fiske, 1984; Higgins & King, 1981; Stangor et al., 1992; Taylor et al., 1978; Macrae, Bodenhausen & Milne, 1995) and the evaluation other people (e.g., Arcuri, 1982; Hagendoom & Henke, 1991; Hewstone, Islam & Judd, 1993; Urban, 1998); however the way in which this occurs has remained unclear. The mechanisms of dominance and the way other possible categorizations are excluded can be explained by the approach to social identity as a cognitive network. This approach might also explain the prevalence of some ideologies over others on the basis of chronical salience of certain self-categories that are repeatedly activated (see Tuner & Reynolds, 2003). According to the principles of network models and to our results regarding the activation of self-categories, we can advance with the hypothesis that cognitive process in social identity can explain this phenomenon. On the one hand, in network models the mechanism of spread of activation explains the salience of related information following the presentation of certain stimuli. In the process of self-categorization information that is associated to a self-category is repeatedly activated; due to the presentation of a stimulus that activates the self-category this information will also be repeatedly salient. On the other hand alternative self-categories that are more inclusive (superordinate) are likely to be inhibited because of the functional antagonism

between this category and the activated one. Particularly, these categories are relevant for the comparisons in this self-categorization. The result of both processes will be a dominance of a specific social self-categorization over all others and this can become chronically salient. We can use this mechanism for explaining why ideologies connected to group identities can sometimes become prevalent. Ideologies that are part of the self-identity that is chronically salient will be salient as well and they will find little opposing ideas associated with relevant superordinate categories since their salience is cognitively inhibited. On the basis of being often activated, these identities and their associated ideologies become dominant and are adopted at several levels of the self since other self-categories become weaker (e.g., fascist ideologies). By having this knowledge we can better understand why certain identities are so deeply rooted and so difficult to change.

Reflecting on whether or not different types of self-presentation (e.g., dual identity; social identity complexity, etc.) are actually possible and under which circumstances is essential in understanding contradictory results obtained in this domain and make more accurate predictions about social relations. This research speaks undoubtedly to the theories of multiple categorizations and the models that are addressing dual identity as a strategy for bias reduction (Gaertner, Rust, Dovidio, Bachman & Anastasio, 1996) or as a step towards projection and discrimination (Mummendey & Wenzel, 1999). For these models it is valuable to know that the connection between two levels of categorization can influence intergroup evaluation and in which manner. Researchers have to take into account the functional relationship between the categories they introduce to create dual identities or even more complex identities. Not all self-categories replace or can be added to a self-categorization. The differentiation between ingroup and outgroup involves cognitive process that constrain the activation of other self-categories and for that reason interventions at the level of social identity might not be successful. For models introducing a different categorization to reduce the perception of ingroup-outgroup differences (considered as a source of ingroup bias), knowing that not all self-categories will be equally activated will help them to explain their results or to design better interventions. Pre-testing the connections between the self-categories in the situation where they ought to be used (comparison or non-comparison between subgroups) will ensure that there is the possibility that one subgroup categorization and one superordinate level of categorization are both salient.

Functional Antagonism

Although the functional antagonism hypothesis was published by Turner in 1987, it has never been tested directly (as far as I know), even if it was at odds with the proposal of dual identity explored in other research relying on the same theoretical background. Our results are consistent with the functional antagonism hypothesis: activation of superordinate categories relevant for intergroup comparisons was not facilitated by earlier activation of subgroup identities in the case of comparison. According to this hypothesis when a self-categorization is salient at one level of inclusiveness other related self-categories on a higher level of inclusiveness cannot be salient at the same time. Based on Experiments 1 and 2, one could speculate that this effect results from weaker association of relevant than non-relevant categories to subgroup identities in the semantic network. However results of Experiment 3 indicate that relevant superordinate categories are hindered of becoming salient because they are being used in ingroup and outgroup comparisons, and not because they are not associated with subgroups: in this experiment relevant superordinate categories were co-activated by subgroup salience in the control conditions in which there was no comparison. Superordinate categories that are relevant are hindered of becoming salient because they are used as a common ground for ingroup and outgroup comparisons, and not because they are not associated with subgroups. Experiment 4 showed an overall association between words related to relevant superordinate categories and subgroup identity (response latencies shorter than baseline, non-words) except in the case of comparisons. We propose an inhibitory mechanism that allows group members to pull relevant superordinate categories apart from their focal attention in comparisons settings to explain this result. The same type of mechanism was proposed by Macrae, Bodenhausen and Milne (1995) in situations where there were two competing categories that participants could use to categorize a social target. The current studies provide additional evidence for such inhibitory dynamics in the context of social identity representation.

Co-activation

Our studies also showed that under certain circumstances the co-activation of superordinate categories after subgroup activation is possible. Supporting available literature on construct activation, superordinate categories that are non-relevant become active in situations where subgroup identities are salient. Non-relevant superordinate categories are not

affected by functional antagonism because they are not used for comparisons between groups. The activation of subgroups spreads to non-relevant superordinate categories both in comparison and in non-comparison situations. That is, aside from the inhibitory process that affects relevant superordinate categories, in the case of non-relevant superordinate categories there is an alternative mechanism in which activation spreads from subgroup identity to the superordinate categories allowing dual identities to form. The same mechanism can act on relevant superordinate categories if a comparison is not required. If we think that Benfica and Sporting supporters differentiate themselves by the football team they follow, we understand that when they are comparing words that are not associated with this dimension (e.g., thinking about team or nation), will be more easily processed because they do not interfere with the process of comparison. If words are not associated with the dimension of comparison (i.e. comparisons at this dimension are not taking place) but are instead related to their football team in another manner these words will rather be co-activated benefiting from the salience of the football related identity. This is exactly what we find in Experiment 3 in which the words related to relevant superordinate categories became easily salient after the presentation of the subgroup self-category when the comparison process was not primed bit there was a football mindset. In this case the salience of the words related to relevant superordinate categories was even greater than the one of words related to non-relevant superordinate categories, which were always activated by the self-category, even when comparisons occur.

In conclusion, in contexts in which comparisons between subgroups on the background of important superordinate categories are very likely or even unavoidable, true, simultaneous dual identity or the establishment of a more inclusive higher order identity in the sense of the common ingroup identity model might be difficult to achieve, for instance in organizational mergers (Gleibs, Mummendey & Noack, 2008; van Leuuwen, van Knippenberg & Ellemers, 2003). This might also explain the results of studies testing the relation between dual identity and reduction of intergroup bias: these results are rather mixed suggesting moderation by contextual variables (e.g., Gaertner, Dovidio & Bachman, 1996, Gaertner, Bachman, Dovidio & Banker, 2001). The cases of organizational mergers are good examples in understanding the cognitive dynamics involved in dual identities. In situations in which the merging companies are equally preserved in the merging (e.g., the merging resulting in Santander-Totta Bank in Portugal), for instance when the names or both companies are combined and the workers of the two companies remain, the new company would not be taken as comparison frame. On the contrary, if the company is transformed

adopting another name, or maintaining the name of only one of the companies, workers of the former companies will tend to compare about their role in the new company (Giessner, Ulrich & van Dick, 2011). The research in this thesis clarifies the possibility of a dual identity in each of the cases. In the first type of merging a dual identity can emerge possibly making things easier for the relationship of workers in the new company. Conversely, people holding identities of the former companies will be looking for their place in the new company, "fighting" to bring traits of their identity into a new identity rather than forming a dual.

Theoretical and practical implications

We argue that the evidence for functional antagonism does not imply the impossibility of dual identities. It seems that the simultaneous activation of non-relevant superordinate categories and subgroups is less problematic than the one of relevant superordinate categories and subgroups, this might indeed open the opportunity for dual identity to occur, as proposed by the common ingroup identity model, particularly in the case of non-relevant superordinate categories.

On the other hand, the ingroup projection model (Mummendey & Wenzel, 1999) seems to suggest that projecting ingroup characteristics onto the superordinate categories produces an overlap between the representation of the subgroups and the superordinate category that will be detected by the activation of both the ingroup and the superordinate categories. Indeed Machunsky and Meiser (2009) found faster trait ratings of relevant superordinate categories after letting participants making trait ratings about the ingroup at the subgroup level. At first glance such findings seem to be contradictory with our results since superordinate categories in the ingroup projection model are generally relevant for subgroups comparisons. However, they might be explainable by the different nature of these tasks. Machunsky and Meiser measured response latencies in trait ratings rather than word recognition. Such method can capture overlapping traits as they are assumed by the ingroup projection model. That is, as these traits are part of both the ingroup and the superordinate category representations, they are activated even in the case of comparison. We would argue that in social comparisons certain aspects of the superordinate category might be activated, for instance those that provide structural alignment of subgroup attributes (e.g., Markman & Gentner, 1997; Mussweiler & Epstude, 2009) even if the accessibility of the focal superordinate category as a whole is inhibited. If then judgments on such superordinate

categories are requested (e.g., Waldzus, Mummendey & Wenzel, 2005) or if response latencies in word recognition is measured after superordinate category primes (e.g., Bianchi et al.), comparison dependent content that is already activated because of subgroup activation (shared ingroup and superordinate category traits) might have advantages in accessibility as compared to other content. Moreover if ingroup and the superordinate category are highly correlated and traits are part of both identities, the faster ratings to traits of relevant superordinate categories might be just part of the activation of the ingroup.

To conclude, the apparently contradicting assumptions for the (im)possibility of dual identities between the principles of the SCT and the more recent approaches of the ingroup projection model and the common ingroup identity model, are resolved (and not any more contradictory) if one takes into account the function of superordinate categories in subgroup comparisons as a moderator. Co-activation of superordinate categories and therefore dual identity is possible under certain circumstances, but difficult to achieve when superordinate categories are used for subgroup comparisons. One could wisely use this information to avoid the further development of social conflicts due to the incorrect introduction of superordinate categories based on political initiatives. For instance, legally, most children born in Portugal can nowadays have the Portuguese nationality (Lei Orgânica n.o 2/2006de 17 de Abril; Lei da Nacionalidade). In schools, teachers can make the equality by nationality salient to deal with differences in ethnicity between students. However this strategy has shown to be problematic because Portuguese nationality has ended up by functioning often as a frame of comparison between “Portuguese of origin” and “foreigner Portuguese”. In this case, the use of “Portuguese” to create egalitarianism in classrooms is prone to have the opposite effect, the possibility of a dual identity will be blocked and differences will be salient. Using School as superordinate category consents a dual identity and can have more positive effects in classroom interaction between children with different backgrounds (Morais, 2011).

Limitations and future directions

An important limitation in this research concerns the operationalization of the relevance of superordinate categories. We obtained stimuli related to relevant and non-relevant superordinate categories for the subgroups Benfica-Sporting by running a pre-test with several questions. Questions tried to capture dimensions and traits on which group members would think about when they were comparing their ingroup to the outgroup and

when they were not comparing. Questions were both direct and indirect and responses where open, therefore we obtained a variety of different answers. The final set of stimuli resulted from the analysis of the common content of these answers to find the most frequently mentioned dimensions and traits. To create the experimental material we formulated all items as categories. This could have produced feelings of "weirdness" during the application of the procedure. In the pre-test some participants reported difficulties in understanding the questions so they could be producing answers randomly or just be guided by social desirability trying to find answers that would please the researcher. This creates some concerns about the concept that was being operationalized by these categories, and although differences in valence and familiarity were later addressed and controlled, differences in relevance could not be confirmed in a later post-test using a different measurement technique. The fact that all four studies reported in this thesis relied on the same stimulus material made it possible to accumulate complementary and comparable evidence for our theoretical assumptions, but it limited the generalizability of the findings. Future research should develop a more unambiguous measure of relevance for comparisons and the implications of comparison relevance for cognitive processes involved in identity representation should be replicated in different intergroup settings.

Regarding the support for inhibition showing functional antagonism between self-categories, results point in the expected direction; however in some cases differences were just marginally significant and more evidence is needed to fully support the principle of functional antagonism. The small size of this effect could justify this difficulty in accessing functional antagonism. We attempted to study complex cognitive processes with a relatively imprecise tool. Our findings rely on the measure of the associations between stimuli to try to capture connections between social concepts. Response latencies in a LDT might not be sufficient to clarify the cognitive processes in course in self-categorization situations. Increasing the number of participants in the experiments would also help to overcome the difficulty in accessing functional antagonism. Moreover, the evidence provided by these studies for the functional antagonism hypothesis is rather indirect. Even though attempts to gather more direct evidence for the involvement of subgroup comparisons succeeded in Experiments 3 and 4, we cannot unquestionably say that subgroup categories were being compared. Future research is necessary to provide more evidence for the role of subgroup comparisons and the functional antagonism assumed.

In future research adding measures of intergroup bias or ingroup projection would also help to grasp the cognitive process taking place in dual identities. With these measures one would gain an understanding of the match between processes of inhibition and co-activation with the processes and outcomes proposed in intergroup models relying on dual identities. Further elaboration is necessary to bring together the results on ingroup projection and recategorization with the ones obtained in the current studies. Our findings already shed some light to the contradiction between predictions by the ingroup projection model and the common ingroup identity model as well as to the unexpected findings of dual identities. Nevertheless a measure of intergroup bias or ingroup projection would allow us to align the processes of inhibition and co-activation with a favourable or unfavourable effect of dual identities on intergroup bias. As proposed in the introduction, inhibition could be in line with ingroup projection; the fact that participants take their ingroup attributes to represent the superordinate category could be seen as the result of the inhibition of the superordinate category.

Finally, despite its limitations this thesis contributes to the understanding of the functioning of social identity in a cognitive network. The results make clear that it is necessary to take into account the representation of social identity and its cognitive principles when studying issues of social identity. It is a surplus to consider that effects of social identity can be interfered by mechanisms in cognitive functioning. For instance, by considering the processes in social identity and relationship between self-categories in the design of experiments on multiple categories results of experiments will become clearer. Also, predicting the sort of change that will result from introducing a second level of categorization gains from considering the nature of self-categorizations used. The second level of categorization can be perceived by participants as superordinate to the first one and in this case whether it is relevant for the comparisons done at the level of the first categorization will make a difference for the way of processing and the evaluation of the members crossing the categories. As described by Urban and Miller (1998), several patterns of evaluation can appear from crossing two categories. These concur with our findings about dual identities. From the crossing an initial ingroup-outgroup differentiation with a relevant categorization one could expect a pattern of dominance or a hierarchical pattern: since the superordinate level of categorization is inhibited, information will be processed on the basis of the subordinate level of categorization and the preference or the evaluation of ingroup members. If instead the crossing superordinate category is not relevant, crossing the categories is likely

to have other implications: the crossing category is not inhibited but co-activated and is considered in the perception and evaluation of outgroup members, and one can expect that being an ingroup member at the level of the superordinate category increases the positivity ofbeing an ingroup member of the subgroup (category conjunction dissimilarity and category conjunction similarity; see Urban & Miller, 1998). Having an ingroup at the superordinate level can have favourable implications on the evaluation of outgroup members at the subgroup level despite their outgroup membership as predicted by recategorization.

In addition, results in the field of multiple and dual identities have practical applications and are important for designing interventions in intergroup conflicts. Knowing about the role of cognitive representation and the cognitive processes will make interventions more effective. If the superordinate category that is used in a social intervention is not relevant it can be co-activated and reduce bias toward the ingroup members of the superordinate category that were outgroup members when only the subordinate level was considered. We find examples of these implications in studies of the Common Ingroup Identity model; when a non-relevant superordinate category was added the initial ingroup favouritism decreased (Gaertner, Mann, Murrell & Dovidio, 1989; Nier, Gaertner, Dovidio, Banker, & Ward, 2001). Moreover, in interventions as the one in "The Green Circle Program" (Houlette et al. 2004) defining the relevance for comparison of the "green circle" as a superordinate category for the subgroups enhanced the manipulation (Black and White; boys and girls; average weight or very much overweight) would allow more accurate predictions. Not only the name of the category has to appear unrelated to the subgroups but also the way it is defined by the researcher. For example, in the case of "The Green Circle Program" the superordinate category that included the subgroup was apparently unrelated to the subgroups, but the explanation given could have created this relationship: *"*Now let's talk about some of the people you may have included in your circle. These figures represent your family . . . those who live with you and those who live in other places. How many of you have brothers? Sisters? How many of you live with your Grandmother? Grandfather? How many of you have a stepmother? Stepfather? Stepsisters or stepbrothers? Look! What has happened to your circle? It's too small. It needs to grow." Researchers did not find an effect of "green circle" categorization reducing bias between boys versus girls and average weight versus very much overweight. It could be the case that the "green circle" was presented as "family", which is likely to be a relevant category for the comparisons of boys versus girls and average weight versus very much overweight for children of the second grade. On the other hand this

category was not relevant for the comparisons between White and Black (they would not compare in terms of family as Blacks and White are less likely to be members of the same family) and hence evidence of reduction of bias between these categories appeared in this case. Limitations encountered by other interventions using superordinate categories to reduce prejudice in schools (e.g., Bigler, 1999; Paluck & Green, 2009) and studies in naturalistic settings (Morais, 2011; Banker & Gaertner, 1998; Gaertner,Bachman, Dovidio & Banker, 2001; Gaertner et al., 1996) corroborate the importance of considering the specificities of self-categorizations and the representation of social identity.

As we already pointed out along the thesis, these findings can have a wide resonance for the issues of affecting European Union (EU). The efforts of the European bodies, institutes and agencies have already increased the awareness and the understanding of the EU as an entity and a country partnership: 63% of people enquired for the Eurobarometer (2014) feel "European". However the EU is still an issue of political debate and many citizens are sceptic or negative about the European Union. Eurobarometer (2014) reports that 50% of the people do not trust the European Union government and more that 50% do not know their rights as European. Social Psychology suggests that people do not easily give up their loyalties as citizens of their member-state nation. Considering the findings in this research, a factor creating the difficulty of assuming a European identity is the cognitive impossibility of articulating a superordinate self-category that is relevant for the differentiation of groups at the national level. Situations where the categorization "European" comes forth as relevant for comparisons between citizens of country members, and therefore is cognitively inhibited, are likely to be frequent. As many features of national identities are built based on the historical differences with neighbour countries, in situations of political negotiation European citizenship appears frequently as dimension of comparison. We see that the feeling of needing to give up the national identities is reduced by formulation of the moto of the European Union "United in diversity" and the definition of the European Union: "Europeans have come together, in the form of the EU, to work for peace and prosperity, while at the same time being enriched by the continent's many different cultures, traditions and languages" (Europawebsite, 2014). However these efforts do not seem to be enough for achieving a lasting awareness and acceptance of this supranational identity. From this research we understand that itis important to avoid or attenuate the process of comparing EU country-member, either reducing the salience of country-nationality or by presenting the European identity with features that are not relevant for the differentiation between nationalities.

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APPENDICES

Appendix A –Pre-test. Original Material in Portuguese.

Appendix B –Results of the Pre-test: List of all categories and dimensions on which the two football team fans were comparable (i.e., target words related to relevant superordinate categories), not comparable (target words related to non-relevant superordinate categories) and mixed.

Appendix C –Categories and dimensions selected as target words for LDT in Experiment 1.

Appendix D –GLM comparing reaction time latencies of relevant versus non-relevant related words in Experiment 1with target words with negative valence.

Appendix E –GLM comparing reaction time latencies of relevant versus non-relevant related words after group-prime and neutral prime in of Experiment 2with non-words as covariant.

Appendix F – Judgements in the Comparison Manipulation in Experiment 3. Original Material in Portuguese.

Appendix G - GLM comparing reaction time latencies of relevant versus non-relevant related words between three mind-set conditions in Experiment 3with non-words as covariant.

Appendix H – GLM comparing reaction time latencies of relevant, versus non-relevant versus non-words related words between three mind-set conditions in Experiment 3 without valence and familiarity covariates.

Appendix I –GLM comparing reaction time latencies of relevant versus non-relevant related words after group-prime and neutral-prime between three mind-set conditions in Experiment 4with non-words as covariates.

Appendix A –Pre-test. Original Material in Portuguese.

N:_____
Sexo:_____
Idade:_____
Local:_____
Filiação:_____

1. Tarefa Introdutória

Estamos a fazer um estudo na área da Psicologia. Esta é uma fase inicial do nosso estudo pelo que estamos interessados em recolher a maior quantidade de informação possível.

Vamos começar por fazer um jogo de tipo palavra-puxa-palavra.

Vou pensar numa palavra. Vou-te pedir para adivinhares a palavra em que estou a pensa a partir das pistas que te vou dando. Por cada palavra que disseres sem adivinhar eu vou dar-lhe uma nova pista.

1.1.Adeptos de futebol

Pistas	**Respostas**
Benfiquistas	
Convívio	
Clube	
Claque	
Bancadas	
Futebol	
Estádio	

1. 2. Selecção Nacional

Pistas	**Respostas**
Benfiquistas	
Países	
Jogadores	
Portugal	
Interesse comum	
Carlos Queirós	

2. Objectivo da Entrevista e Verificação da pré-condição de participação

Como já percebeste este estudo é sobre Benfiquistas e Sportinguistas.

És Benfiquista? És Sportinguista?_____

Agora vamos colocar-te algumas questões acerca dos Benfiquistas e dos Sportinguistas. Não existem respostas certas nem erradas. Estamos interessados na tua opinião pessoal e na forma como pensas sobre estas questões.

A tua opinião é muito importante porque este estudo tem como objectivo conhecer melhor a perspectiva dos Benfiquistas acerca do universo do futebol. Pedimos-te que respondas de forma totalmente espontânea e honesta, sem te preocupar com a veracidade das tuas respostas.

(Procura de atributos)

3. Questões evocando contextos de rivalidade/comparação

3.1. Imagina que eu sou (da equipa rival) □Sportinguista

□ Benfiquista

Tenta convencer-me a passar a ser Benfiquista (da equipa do entrevistado). Porque ser Benfiquista e não Sportinguista? Imagina que te pagam para me convencer.

3.2. Que diferenças é que achas que há entre Benfiquistas e Sportinguistas? O que é que é tão bom de ser Benfiquista (da equipa do entrevistado)?

3.3. Quando estás perto de um grupo de pessoas como é que sabes quem é que é do Benfica e quem é que é do Sporting? O que implica ser Benfiquista por comparação a ser Sportinguista?

3.4. Quando está a assistir a um jogo de futebol entre Benfica e Sporting, o que pensas dos Sportinguistas? O que pensas dos Benfiquistas?

4. Questões evocando contextos de cooperação/não comparação

4.1. Continuando a imaginar que eu sou Sportinguista (da equipa rival do entrevistado). Tu e eu somos de clubes diferentes mas temos coisas em comum. O que é que há de comum entre Benfiquistas e Sportinguistas? Em que é que não faz diferença ser Benfiquista ou Sportinguista?

4.2. Estamos a realizar juntos uma tarefa. Existem outras situações em que os adeptos dos diferentes clubes fazem coisas em conjunto, consegue lembrar-se de alguma?

(Transformação dos atributos em Categorias)

5. "Substantivação"

Até aqui falaste-me das características dos Benfiquistas e dos Sportinguistas. Vamos tentar reuni-las agora numa lista. Podemos dizer que os Benfiquistas e os Sportinguistas são comparáveis em relação a que?

Características	Dimensões	(FIM) Contribuição para a rivalidade

(Tarefas associativas. Procura de categorias relacionadas com Benfiquista e Sporting)

6. Analogias

A seguir vou dar-te várias frases incompletas. Tenta encontrar a palavra que falta guiando-te pelo exemplo oferecido na primeira parte da frase. Vê o seguinte exemplo.

Maçãs e laranjas estão para fruta como Benfiquistas e Sportinguistas estão para… adeptos de futebol.

Na primeira parte da frase dá-se como exemplo a palavra fruta para relacionar as palavras "maçãs" e "laranjas". A palavra que terias de encontrar seria "adeptos de futebol".

6.1. Periquito e corvo estão para pássaros como Benfiquistas e Sportinguistas estão para…...

6.2. Armário e cómoda estão para mobília como Benfiquistas e Sportinguistas estão para….

6.3. Tenistas e ciclistas estão para desportistas como Benfiquistas e Sportinguistas estão para….

Vê agora o exemplo que se segue e realiza a mesma tarefa que no caso anterior.

Médicos e enfermeiros estão para equipa de trabalho como Benfiquistas e Sportinguistas estão para Selecção nacional.

6.4 Professores e alunos estão para turma como Benfiquistas e Sportinguistas estão para……

6.5. Vírus e Bactérias estão para doença como Benfiquistas e Sportinguistas estão para……

6.6. Chouriço e batatas estão para cozido à portuguesa como Benfiquistas e Sportinguistas estão para….

7. Avaliação da relevância das categorias encontradas

Na questão 5 a que respondeste há pouco escrevemos uma lista de características dos Benfiquistas e dos Sportinguistas. Das palavras que constam nesta lista quais é que achas que contribuem para uma maior rivalidade entre Benfiquistas e Sportinguistas (+)? Quais contribuem menos (-)? (Escrever a resposta na tabela da questão 5).

8. Despedida e agradecimentos

Obrigada pela tua colaboração. Vamos utilizar as tuas respostas para prosseguir com este estudo. Poderás vir a participar na segunda parte do estudo em Dezembro. Para participar deixa-me o teu contacto e entraremos em contacto contigo mais tarde.

Appendix B – Results of the Pre-test: List of categories and dimensions on which the two football team fans were comparable (i.e., target words related to relevant superordinate categories), not comparable (target words related to non-relevant superordinate categories) and mixed.

Dimensions and categories were football fans are comparable		
1	*Estatuto*	Status
2	*Classe social*	Social class
3	*Elite/Ricos/Betinhos/Exclusivos*	Elite/Rich/Exclusive
4	*Povo(/Pobres/Chungas/Labregos)*	People/Poor
5	*Numerosos*	Numerous
6	*(Adeptos) violentos*	Violent
7	*Conflituosos/ Arruaceiros*	Rioters
8	*Civilizados*	Civilized
9	*Entusiastas (do futebol/clube)*	Enthusiastic
10	*Apoiantes*	Supporters
11	*Futebol*	Football
12	*Estádio*	Stadium
13	*Festa/Alegria*	Party/Happiness
14	*Campeões*	Champions
15	*Campeonatos*	Championships
16	*Academia/Formação*	Football school

Dimensions and categories were football fans are NOT comparable		
17	*Selecção*	National team
18	*Portugal/Portugueses*	Portugal/Portuguese
19	*Nação*	Nation
20	*Clubistas*	Club-fans
21	*Espectadores*	Spectators
22	*Tele-espectadores*	TV-watchers
23	*Vitória*	Victory
24	*Aspirantes/Classificados*	Candidate/ Classified
25	*Vencedores*	Winners
26	*Fãs*	Fans
27	*Lisboetas*	Lisbon people
28	*Praticantes*	Practitioners
29	*Desportistas*	Sportive
30	*Anti-FCP*	FCP-opponents*
31	*Internacionais*	International
32	*Europeus*	European
33	*Equipa*	Team
34	*Convívio(/Confusão/Futebolada)*	Get-together
35	*Campeonato(/Liga)*	Championship
36	*Candidatos*	Candidates

* FCP stands for Futebol Clube do Porto, a rival team from the second biggest city in Portugal

Mixed dimensions and categories		
37	*Fanáticos*	Fanatics
38	*Adeptos/Aficionados/Simpatizantes*	Fans
39	*Clubes de futebol*	Football clubs
40	*Esperançados*	Hopeful

Appendix C – Categories and dimensions selected as target words for LDT in Experiment 1.

Selected dimensions and categories were football fans are comparable		
1	*Academia*	Football-school
2	*Apoiantes*	Supporters
3	*Arruaceiros*	Rioters
4	*Betinhos*	Well-behaved
5	*Campeões*	Champions
6	*Conflituosos*	Instigators
7	*Elite*	Elite
8	*Entusiastas*	Enthusiasts
9	*Estádio*	Stadium
10	*Festa*	Party
11	*Futebol*	Football
12	*Numerosos*	Numerous
13	*Povo*	People
14	*Sócios*	Associated
15	*Violentos*	Violent

Selected dimensions and categories were football fans are NOT comparable		
16	*Candidatos*	Candidate
17	*Classificados*	Classified
18	*Clubistas*	Club-fans
19	*Convívio*	Get-together
20	*Desportistas*	Sportive
21	*Equipa*	Team
22	*Espectadores*	Spectators
23	*Europeus*	Europeans
24	*Fãs*	Fans
25	*Lisboetas*	Lisbon
26	*Nação*	Nation
27	*Portugueses*	Portuguese
28	*Praticantes*	Practitioners
29	*Selecção*	National team
30	*Anti-FCP*	FCP-opponents*

* FCP stands for Futebol Clube do Porto, a rival team from the second biggest city in Portugal

Appendix D –GLM comparing reaction time latencies in relevant versus non-relevant related words in Experiment 1with target words with negative valence.

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	df	*Mean Square*	*F*	Sig.	Partial Eta Squared
relevance	Greenhouse-Geisser	11438.17	1.44	7923.30	16.78	.00	.30
Error (relevance)	Greenhouse-Geisser	26581.64	56.30	472.14			

a. Computed using alpha = .05

Descriptive Statistics

	Mean	*Std. Deviation*	N
Relevant	484.11	71.27	40
Non relevant	468.61	76.81	40
Non-Words	492.13	75.88	40

Pairwise Comparisons

(I) relevance	(J) relevance	Mean Difference (I-J)	*Std. Error*	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Relevant	Non-relevant	15.50*	2.57	.00	9.07	21.93
	Non-Words	-8.02	4.55	.26	-19.41	3.37
Non-relevant	Relevant	-15.50*	2.57	.00	-21.93	-9.07
	Non-Words	-23.52*	4.88	.00	-35.72	-11.32
Non-Words	Relevant	8.02	4.55	.26	-3.37	19.41
	Non-relevant	23.52*	4.88	.00	11.32	35.72

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix E –GLM comparing reaction time latencies of relevant versus non-relevant related words after group-prime and neutral prime in of Experiment 2with non-words as covariant.

Tests of Within-Subjects Effects

Source	Type III Sum of Squares	df	*Mean Square*	*F*	Sig.	*Partial Eta Squared*
relevance	Sphericity Assumed	60451.02	1	60451.02	38.4	.00	.4
relevance * Non-Words	Sphericity Assumed	6633.6	1	6633.6	4.21	.05	.07
Error (relevance)	Sphericity Assumed	91308.22	58	1574.3			
prime_no_prime	Sphericity Assumed	2650.24	1	2650.24	1.49	.23	.03
prime_no_prime * NonWords	Sphericity Assumed	2863.21	1	2863.21	1.61	.21	.03
Error (prime_no_prime)	Sphericity Assumed	103361.02	58	1782.09			
relevance * prime_no_prime	Sphericity Assumed	128.29	1	128.29	.13	.71	.00
relevance * prime_no_prime * NonWords	Sphericity Assumed	369.33	1	369.33	.37	.55	.01
Error (relevance*prime_no_prime)	Sphericity Assumed	58680.23	58	1011.73			

Pairwise Comparisons between relevant and non-relevant targets

(I) relevance	(J) relevance	Mean Difference (I-J)	*Std. Error*	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Relevant	Non-relevant	31.74[*]	5.12	.00	21.49	41.99

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix F– Judgements in the Comparison Manipulation in Experiment 3. Original Material in Portuguese.

Qual dos clubes de futebol é mais BEM SUCEDIDO?

Qual dos dois clubes de futebol tem ADEPTOS mais TOLERANTES às derrotas?

Qual dos dois clubes de futebol tem ADEPTOS mais AUTOCRITICOS?

Qual dois clubes de futebol tem ADEPTOS mais EXIBICIONISTAS?

Qual dos dois clubes de futebol tem ADEPTOS mais ENTUSIASTAS?

Qual dos dois clubes de futebol tem ADEPTOS mais SAUDOSOS?

Qual dos dois clubes de futebol tem ADEPTOS mais OPTIMISTAS?

Qual dos dois clubes de futebol tem ADEPTOS mais COESOS?

Qual dos dois clubes de futebol tem ADEPTOS mais ARROGANTES?

Qual dos dois clubes de futebol tem ADEPTOS mais JOVENS?

Appendix G –GLM comparing reaction time latencies of relevant versus non-relevant related words between three mind-set conditions in Experiment 3with non-words as covariant.

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	df	*Mean Square*	*F*	Sig.	*Partial Eta Squared*
relevance	Sphericity Assumed	504.34	1	504.34	2.70	.11	.06
relevance * Non-Words	Sphericity Assumed	511.09	1	511.09	2.74	.11	.06
relevance * Non-WordsValence	Sphericity Assumed	301.48	1	301.48	1.62	.21	.04
Relevance * Non-relevantValence	Sphericity Assumed	30.42	1	30.42	.16	.69	.00
relevance * RelevantValence	Sphericity Assumed	83.27	1	83.27	.45	.51	.01
relevance * Non-WordsFamiliarity	Sphericity Assumed	350.41	1	350.41	1.88	.18	.04
relevance * IrrelevantFamiliarity	Sphericity Assumed	88.89	1	88.89	.48	.49	.01
relevance * RelevantFamiliarity	Sphericity Assumed	78.33	1	78.33	.42	.52	.01
relevance * Condition	Sphericity Assumed	2301.92	2	1150.96	6.17	.00	.22
Error(relevance)	Sphericity Assumed	8026.79	43	186.67			

Estimates

Condition	relevance	*Mean*	*Std. Error*	95% Confidence Interval	
				Lower Bound	Upper Bound
comparison prime	Relevant	513.19[a]	5.98	501.12	525.26
	Non-relevant	503.73[a]	4.64	494.38	513.08
Control 1: categorization IG_OG	Relevant	497.18[a]	6.15	484.77	509.59
	Non-relevant	502.12[a]	4.77	492.51	511.73
Control 2: categorization football related yes/no	Relevant	498.24[a]	6.12	485.90	510.57
	Non-relevant	512.18[a]	4.74	502.63	521.73

a. Covariates appearing in the model are evaluated at the following values: ControlRT = 533.8343. ControlValence = 2.2577. IrrelevantValence = 5.342. RelevantValence = 4.9877. ControlFam = 1.8481. IrrelevantFam = 6.123. RelevantFam = 5.875.

Pairwise Comparisons

Condition	(I) relevance	(J) relevance	Mean Difference (I-J)	*Std. Error*	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
comparison prime	1	2	9.46	4.71	.05	-.038	18.963
	2	1	-9.46	4.71	.05	-18.96	.038
Control 1: categorization IG_OG	1	2	-4.94	4.85	.31	-14.71	4.83
	2	1	4.94	4.845	.31	-4.83	14.71
Control 2: categorization football related yes/no	1	2	-13.94*	4.82	.01	-23.65	-4.23
	2	1	13.94*	4.82	.01	4.23	23.65

(I) (J) 1 = Relevant, 2 = Non-relevant

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Sidak.

Appendix H –GLM comparing reaction time latencies of relevant, versus non-relevant related words versus non-words between three mind-set conditions in Experiment 3withoutvalence and familiarity covariates.

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	*F*	Sig.	*Partial Eta Squared*
relevance	Greenhouse-Geisser	30758.97	1.64	18704.74	45.91	.00	.48
relevance * condition	Greenhouse-Geisser	2146.42	3.29	652.63	1.60	.19	.06
Error (relevance)	Greenhouse-Geisser	33496.92	82.22	407.39			

Estimates Manipulation*Relevance

Condition	relevance	*Mean*	*Std. Error*	95% Confidence Interval	
				Lower Bound	Upper Bound
comparison prime	1	515.07	14.09	486.77	543.37
	2	508.10	14.83	478.31	537.89
	3	540.02	16.86	506.15	573.89
Control 1: (categorization IG_OG)	1	501.17	14.09	472.87	529.47
	2	502.89	14.83	473.10	532.68
	3	533.44	16.86	499.57	567.31
Control 2: (categorization football related yes/no)	1	492.03	14.5	462.91	521.15
	2	506.74	15.26	476.09	537.39
	3	527.70	17.35	492.85	562.56

relevance: 1 = Relevant, 2 = Non-relevant, 3 = Non Words

Pairwise Comparisons

Condition	(I) relevance	(J) relevance	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
Comparison prime	1	2	6.97	4.87	.41	-5.07	19.01
		3	-24.95*	7.31	.00	-42.998	-6.91
	2	1	-6.97	4.87	.41	-19.01	5.07
		3	-31.92*	5.88	.00	-46.44	-17.40
	3	1	24.95*	7.31	.04	6.91	42.998
		2	31.92*	5.877	.00	17.40	46.44
Control 1:categorization IG_OG	1	2	-1.72	4.87	.98	-13.76	10.32
		3	-32.27*	7.31	.00	-50.32	-14.22
	2	1	1.72	4.87	.98	-10.32	13.76
		3	-30.55*	5.88	.00	-45.07	-16.04
	3	1	32.27*	7.31	.00	14.22	50.32
		2	30.55*	5.88	.00	16.04	45.07
Control 2:categorization football related yes/no	1	2	-14.71*	5.02	.02	-27.1	-2.32
		3	-35.67*	7.52	.00	-54.24	-17.10
	2	1	14.71*	5.015	.02	2.318	27.1
		3	-20.97*	6.047	.00	-35.906	-6.03
	3	1	35.67*	7.52	.00	17.10	54.24
		2	20.97*	6.05	.00	6.03	35.91

(I) (J) relevance: 1 = Relevant, 2 = Non-relevant, 3 = Non Words

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Sidak.

Appendix I – GLM comparing reaction time latencies of relevant versus non-relevant related words after group-prime and neutral-prime between three mind-set conditions in Experiment 4with non-words as covariates.

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	*df*	*Mean Square*	*F*	Sig.	Partial Eta Squared
Relevance	Sphericity Assumed	428.7	1	428.696	.37	.54	.00
relevance * Non-Words	Sphericity Assumed	2435.12	1	2435.12	2.12	.15	.04
relevance * Condition	Sphericity Assumed	6171.47	2	3085.74	2.68	.077	.09
Error(relevance)	Sphericity Assumed	63297.14	55	1150.86			
Prime	Sphericity Assumed	9.97	1	9.97	.01	.93	.00
prime * Non-Words	Sphericity Assumed	358.14	1	358.14	.29	.59	.01
prime * Condition	Sphericity Assumed	1087.75	2	543.88	.44	.65	.02
Error(prime)	Sphericity Assumed	67867.97	55	1233.96			
relevance * prime	Sphericity Assumed	75.45	1	75.45	.08	.78	.00

relevance * prime * Non Words	Sphericity Assumed	91.97	1	91.97	.1	.76	.00
relevance * prime * Condition	Sphericity Assumed	5656.27	2	2828.14	2.97	.06	.1
Error(relevance*prime)	Sphericity Assumed	52378.86	55	952.34			

Estimates

prime	Condition	relevance	*Mean*	*Std. Error*	95% Confidence Interval	
					Lower Bound	Upper Bound
Prime	Comparison	1	598.98[a]	10.08	578.79	619.17
		2	554.9[a]	10.19	534.48	575.31
	Control	1	577.87[a]	9.69	558.45	597.28
		2	558.92[a]	9.79	539.29	578.55
	Non Comparison	1	568.89[a]	10.17	548.52	589.27
		2	550.80[a]	10.28	530.21	571.4
No Prime	Comparison	1	608.52[a]	11.01	586.45	630.58
		2	578.71[a]	8.66	561.36	596.07
	Control	1	599.63[a]	10.58	578.42	620.84
		2	591.45[a]	8.33	574.77	608.13
	Non Comparison	1	604.95[a]	11.11	582.7	627.21
		2	557.01[a]	8.74	539.51	574.52

relevance: 1 = Relevant, 2 = Non-relevant

a. Covariates appearing in the model are evaluated at the following values: RT_Control_all = 623.3263.

Pairwise Comparisons

Prime	Condition	(I) relevance	(J) relevance	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
							Lower Bound	Upper Bound
Prime	Comparison	1	2	44.09*	7.97	.00	28.12	60.05
		2	1	-44.09*	7.97	.00	-60.05	-28.12
	Control	1	2	18.95*	7.66	.02	3.60	34.3
		2	1	-18.95*	7.66	.02	-34.3	-3.60
	Non Comparison	1	2	18.09*	8.04	.03	1.99	34.2
		2	1	-18.09*	8.04	.03	-34.2	-1.99
No Prime	Comparison	1	2	29.80*	12.57	.02	4.61	55
		2	1	-29.80*	12.57	.02	-55	-4.61
	Control	1	2	8.18	12.09	.50	-16.04	32.40
		2	1	-8.18	12.09	.50	-32.40	16.04
	Non Comparison	1	2	47.94*	12.68	.00	22.53	73.36
		2	1	-47.94*	12.68	.00	-73.36	-22.53

(I) (J) relevance: 1 = Relevant, 2 = Non-relevant

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.