Social Representations of Gender in Peer Interaction and Cognitive Development
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Abstract
The paper discusses how social representations of gender and their development in childhood relate to the structuring of communication on collaborative problem solving in the educational context and the consequences of such communication dynamics for learning and cognitive development. In the theoretical framework and the empirical work outlined an emphasis is given on the articulation of different levels of analysis (intra-personal, inter-personal, inter-group/positional and ideological/social representations) (Doise, W. 1986. Levels of Explanation in Social Psychology: European Monographs in Social Psychology. Cambridge: Cambridge University Press) in a way that explanatory power is increased for understanding the often contradictory findings in the literature around gender talk in mixed-sex dyads in the educational context.

Introduction
The battle of the sexes is a popular discussion theme in everyday life. Gender differences have often been exaggerated in popular culture to the effect that it was claimed that ‘Men are from Mars and Women are from Venus’ (Gray, 1992). One of the main areas of such exaggerated differences is the area of communication style (Tannen, 1993). It is now well established that gender indeed influences communication but as we move from popular culture to academic theories the field becomes somewhat more complicated in that we realise that conversation differences are very much dependent on the context of their expression (Deaux & Major, 1987). From social developmental psychology (Duveen, 1993) we also know that social representations of gender and gender identities are subject to an ontogenetic process of development that allows little space for sweeping generalisations across ages.

In a review of gender differences in communication, Carli and Bukatko (2000) conclude that such differences emerge early in children’s development and persist throughout life. They claim that ‘Males are generally more concerned with self assertion and dominance, whereas females are generally more concerned with collaboration and responsiveness to others’ (p. 301). However, in their review they also mention the high degree of variability and sensitivity to context in these patterns.

If this is indeed the case, one could wonder what the consequences of such differences are for the education of students in the educational setting and their cognitive outcomes since education from a social constructivist perspective can be described as a process of social influence between students and teachers and between students themselves. Is it possible that differences in communication structure the learning experience of girls and boys differently? And if yes, are these differences consequential for their learning and cognitive development? These are the basic two questions that this paper will tackle.
Gender and Communication in the Educational Setting

Empirical findings about gender differences in relation to language abound in the fields of sociolinguistics (Leaper, 1991; Goodwin, 1980, 2001; Goodwin & Goodwin, 1987), gender development (Jacklin & Maccoby, 1978; Maccoby, 1990), and educational studies (Webb & Kenderski, 1985; Webb & Mastergeorge, 2003; Lockheed, 1985). Many of the studies in educational settings were sophisticated enough to explore differences in communication in the context of working is same or mixed-sex dyads or groups. In a study of mixed-sex math groups Webb and Kenderski (1985) reported that among high achieving children, girls responded to requests for information from either male or girl group members, whereas boys responded almost exclusively to other boys. Lockheed (1985), via a meta analysis of 64 data sets involving mixed-sex working groups of school-age children, showed that boys were fairly consistently more influential over group decisions than were girls. Howe (1997) review of desk based group work concludes that: a) In structured group work girls ask for help to a greater extent than boys, b) Both girls and boys prefer to ask boys for help, c) Girls are more likely than boys to answer whatever requests for help are addressed to them.

Despite the fact that all these studies and reviews point to a general asymmetry between the genders in favor of males, they often treat gender as an ascribed category and fail to account for different forms of masculinities and femininities. More importantly, they overlook the fact that conversational styles might be contingent upon the crucial factor of knowledge asymmetries regarding the task at hand. This masking of knowledge asymmetry between the partners is clearly seen in the contradictory findings reported in the context of mixed-sex pairs regarding both the communicative styles adopted in these dyads and the performance of partners on collaborative problem solving.

Some studies, for example, have shown that both boys and girls use more inconsistent styles with their traditional ‘assertive’ and ‘mitigating’ styles correspondingly in mixed-sex groups than in same-sex groups (Killen & Naigles, 1995; Leaper, 1991). For example, there are findings that girls adopted more heavy-handed persuasion techniques when interacting with boys (Miller, Danaher, & Forbes, 1986). On the contrary, other studies reported that girls are more passive when interacting with boys (Jacklin & Maccoby, 1978; Maccoby, 1990). Similar contradictory findings were reported when it comes to comparisons on the joint performances between same-sex dyads and mixed-sex dyads (Holmes-Lonergan, 2003); sometimes same-sex dyads perform better than mixed-sex dyads and other times worse or equal.

Social Representations as a Framework for Understanding Gender Identity Dynamics in Collaborative Problem solving

All these contradictory findings point to the need for a theoretical framework that can resolve these apparent contradictions by articulating different levels of analysis (Doise, 1986). A series of studies that we called a third generation of research in the field of peer interaction and cognitive development aimed to do just that while retaining the strengths of a structural analysis of Piagetian constructivism (for reviews and commentaries of this work see Ferrari, 2007; Castorina, 2010; Martin, 2007; Maynard, 2009; Nicolopoulou & Weintraub, 2009; Psaltis, 2010; Psaltis, 2011b; Psaltis, Duveen, & Perret-Clermont, 2009; Simao, 2003; Sorsana & Trognon, 2011). In its understanding of the articulation of intra-personal with interpersonal and intergroup dynamics the framework is building on Piagetian insights on the role of social relations in cognitive development (Piaget, 1932).
and the empirical work of the ‘social Genevans’ on peer interaction and cognitive development (Doise, Mugny, & Perret-Clermont, 1975; Perret-Clermont, 1980). Moreover, it articulates these three levels with the fourth level of analysis (ideological/social representations) premised on the work and theoretical insights of late Gerard Duveen in Cambridge on the study of the ontogenesis of social representations of gender in childhood (Lloyd & Duveen, 1990, 1992; Duveen, 1993, 1997, 2000, 2001). Such a framework attempts to articulate the four levels of analysis (Doise, 1986) into a more coherent account of the role of both gender status and knowledge asymmetries at different ages in structuring social interaction and cognitive development.

**Ontogenesis of Social Representations of Gender when Starting School**

Social representations of gender in childhood undergo a process of reconstruction, elaboration and development in their first year of starting school (Duveen & Lloyd, 1986, 1990; Lloyd & Duveen, 1990, 1991, 1992). These ethnographic and experimental studies generally uncover the important role played by schooling in amplifying the representations of gender that children bring to school. More particularly, it is shown that females and males share similar knowledge of the resources available for the expression of their social gender identities in the material culture of their classrooms (toys, story characters, pretend play), but when it comes to the expression of their social gender identities, it is found that their gender membership influences the social organisation and activities through its effects on composition and size of self-organising groups and their positioning against the material culture. The two authors conclude (1991, pp.446), that ‘the assertion of social gender identity is the expression of a position in relation to a set of social representations and that this expression is mediated by membership in a particular social category’.

In this way, social gender identities in the everyday practice of education, establish regularities both in and out of the classroom. Much of these practices are explicitly gendered, but others are implicitly gendered in the sense that gender is ‘done’ as performance in every engagement with the objects of our environment (Butler, 1990). In this view, gender doesn’t just exist, but is continually produced, reproduced and indeed changed through peoples performance of gendered acts as they project their own claimed gendered identities ratify or challenge others identities and in various ways support or challenge systems of gender relations and privilege (Eckert & McConnel-Ginet, 2003). In this framework the notion of resistance stemming from social identity dynamics has a crucial role in both structuring communication at the interpersonal level and cognitive operations at the intra-personal level of analysis. For Duveen (2001) resistance in being positioned by others is often emerging due to the dual nature of identity, which is not only about making identifications, but also about being identified by others (Duveen, 2001).

Resistance is the point where an identity refuses to accept what is proposed by a communicative act, that is it refuses to accept an attempt at influence…Resistance which occurs first in the microgenetic evocation of social representations can lead both to ontogenetic transformations (where identities themselves are reconstructed) and to sociogenetic change (where resistance becomes first a resistance to a change in identity, and then linked to an effort to influence the wider social world to recognise that identity). (p. 269).

It could be argued that social representations of gender, map out different positions in relation to the other and particular objects, thus constraining and enabling particular triadic
Subject-Other-Object configurations in the representational sphere (Martin, 2007; Ferrari, 2007; Zittoun, Cornish, Gillespie, & Psaltis, 2007). This points to what Duveen (1997), called the dual function of social representations, of defining the world and locating a place within it that gives social representations their symbolic value. This interpretation makes clearer the definition of social representations as:

...a system of values, ideas and practices with a twofold function: first to establish an order which will enable individuals to orient themselves in their material and social world and to master it; and secondly, to enable communication to take place among the members of a community by providing them with a code for social exchange and a code for naming and classifying unambiguously the various aspects of their world and their individual and group history. (Moscovici, 1972, p. xii).

This dynamic perspective on social representations theory, frees the researcher to discuss social representations of gender, even when gender is not manifestly the object of discussion. Collaborative problem solving is a gendered performance without the need for gender to be explicitly discussed. As every communication relates to issues of identity and face work, then social representations of gender— to socially represent gender— could be observed when in the educational context children collaborate for example on even a ‘gender neutral’ task as they use communicative styles as symbolic resources (Zittoun, Duveen, Gillespie, Ivinson, & Psaltis, 2003) based on implicit presuppositions (Moscovici, 1994) from the meaning making system (Valsiner, 2003) of social representations of gender.

To understand why a male-female-object interaction can create points of resistance without the object being a priori explicitly gender marked (like in the case of a doll or toy car for example) we need to understand the way social representations of gender in childhood are shared as a structured field. According to Duveen (2001), social representations of gender are structured around a figurative nucleus (Moscovici, 1981), of a bipolar opposition which offers a degree of clarity and simplicity, which is also consistent with children’s limited capacity for any cognitive elaborations that might require greater sophistication. This figurative nucleus of bipolar opposites also supports a conceptualisation of social life in terms of two complementary, but exclusive categories. Ideology however valorises categorisations creating asymmetries:

Yet, the masculine and the feminine are not equals and the shadow which the inequality casts can be observed in the disputes which break out over access to resources and in the psychological patterns of overvaluing same gender group and devaluing the opposite gender. (Duveen, 2001, p. 266)

The collaborative problem solving situation of the classroom is very much a situation where socio-cognitive conflict based on the differing perspectives on the problem might arise (Doise & Mugny, 1984) or conflict over access to the task material and problem space in case it resolves manipulation of material. Thus, situations of work in mixed-sex dyads might very well evoke gender status asymmetries without the need of the object being explicitly marked for gender. Such status asymmetries however can be crucial for learning and cognitive development of the partners involved in the interaction.

**Social Relations and Cognitive Development in Piaget**

The forming of more symmetrical or less symmetrical social relationships is of crucial importance for the promotion or hindering of the cognitive development of children
who take part in such relationships according to Piagetian theory (see Psaltis et al. 2009). Importantly, in his work on the moral judgment of the child Piaget (1932) makes a distinction between relations of constraint and relations of co-operation. The first relates to a morality of heteronomy and respect for authority and the second to a morality of autonomy, mutual respect and reciprocity. He argued that a relation of unilateral respect (constraint) hinders cognitive development by suppressing the coordination of views, whilst a relation of mutual respect (co-operation) facilitates the free exchange of views and promotes cognitive development, since it tends to equilibrium by facilitating decentration and coordination of views into a more advanced form of knowledge.

This distinction was echoed later in the first generation of research on peer interaction and cognitive development in the work of ‘social Genevans’ and the introduction of the notion of socio-cognitive conflict (Doise, Mugny, & Perret-Clermont, 1975). In Mugny, De Paolis and Carugati (1984), a theoretical account of social regulations is elaborated where the authors identify some factors that may be distinguished in terms of different levels, that might hinder the production and resolution of socio-cognitive conflict. Importantly, these writings gave an account of how socio-cognitive conflict can be resolved in different modalities. These modalities are directly connected to theories of social influence (Asch, 1952; Moscovici, 1976; Milgram, 1974). ‘Social Genevans’ claim that socio-cognitive conflict will be cognitively regulated by a new constructivist elaboration when it is not regulated in terms of an exclusively ‘relational’ modality (Doise, Mugny, & Pérez, 1998; Quiamzade & Mugny, 2001). These relational modalities could be conformity (Asch, 1952) or compliance (Milgram, 1974). Social psychological literature therefore is directly relevant to this work especially work done by Moscovici (1976, 1980, 1985) on compliance and conversion that also goes back to Piaget. Consequently, asymmetries like gender and knowledge in the classroom peer culture can constrain interactions, but to go back to the issue discussed earlier about co-operation and constraint should we expect that relations between the genders act as relations of constraint in the Piagetian sense?

The Third Generation of Studies of Peer Interaction and Cognitive Development

The third generation of research on peer interaction and cognitive development was initiated by Leman and Duveen (1996, 1999, 2003) who have demonstrated that the pattern of conversation between pairs of peers, as they engage in a collective approach to a problem, is influenced by the gender composition of the pairs under conditions of conflicting or aligned asymmetries of gender and knowledge.

In their work (Leman & Duveen, 1999, 2003) they have used as a task one of Piaget’s (1932) moral judgment dilemmas, and composed pairs of children in which one had initially given the more advanced, autonomous, response and the other a heteronomous response. But they also crossed this factor with gender to produce four distinct pair-types: an autonomous male with a heteronomous male (Mm), an autonomous male with a heteronomous female (Mf), an autonomous female with a heteronomous female (Ff) and an autonomous female with a heteronomous male (Fm). In this design, therefore, two potential sources of asymmetry were introduced, knowledge asymmetry or ‘epistemic authority’, as the authors called it, and gender as a status asymmetry. Analyses of the conversations within these pairs indicated systematic variations across pair types. The most sharply contrasted differences were observed between the Mf and Fm pairs. In the Mf pairs, the conversations were often very short, consisting simply of the male asserting what the answer should be and the female agreeing to it. In the
**Fm** pairs, the conversations were much more extended, and the females generally had to deploy a wider variety of arguments to persuade their partner. These findings were attributed to the aligned positioning of epistemic authority and gender authority in the **Mf** dyad and on the contrary in the conflicting positioning of epistemic and gender authority in the **Fm** dyad.

Despite the very fruitful and insightful use of the four pair types (**Mm**, **Mf**, **Ff** and **Fm**), the design of the Leman and Duveen (1999) study did not include post-test measures. Thus it was not possible to assess any relationship between features of the conversation and developmental outcomes. Nevertheless, this first study clearly indicated the role of the alignment or tension between the 'epistemic authority' given to children by the experimental manipulations of their pre-test answers and the gender positions that children occupy in the representational sphere. The crossing of the developmental asymmetry and the gender asymmetry is important for theoretical reasons. It is not gender per se that takes the emphasis as a monolithic sociological category but the dynamic aspect of positioning under conditions of aligned or conflicting gender and knowledge asymmetries.

The Leman and Duveen (1999) design was extended to include a post-test measurement in a series of studies that followed. Similar results have been reported on the conservation of liquid task (Psaltis & Duveen, 2006, 2007; Duveen & Psaltis, 2008) and a spatial rotation task (Psaltis, 2005b, Psaltis, 2011a; Zapiti & Psaltis, 2012) using the village task described in Doise & Mugny, 1984). In all these studies, with 6.5–7.5 year olds the results went into the same direction in both cognitive tasks. The most significant differences appeared between the **Mf** and the **Fm** dyad in both the form of the conversations and the cognitive outcomes of children in the post-tests that were originally less developmentally advanced. In the **Mf** dyads there was often less resistance or engagement with the material of the task by females which hindered their cognitive development. On the contrary in the **Fm** dyads the males often resisted being positioned as less knowledgeable, and engaged themselves in manipulating the material more often which often resulted in better cognitive outcomes in the post-tests. There is also evidence that other sources of asymmetry between children, such as peer popularity or academic reputation, can influence communication in a similar way as the status of being male in the gender field (Psaltis, 2005b).

Another innovation of the third generation of studies is the introduction of a more molar level of analysis of communication by distinguishing different types of conversation or interaction types. Rather than analyzing particular speech-acts or sequential patterns of speech-acts, this analysis considered the conversations across the interaction as a whole, and differentiated four conversation or interaction types (Psaltis et al., 2009; Psaltis, 2005b; Psaltis & Duveen, 2006, 2007; Duveen & Psaltis, 2008). For example on the conservation of liquids task the following conversation types were identified:

1. **Non-conserving** In a minority of cases the non-conserving child was able to persuade their conserving partner to agree on a joint response of non-conservation.
2. **No Resistance** Conversations which began with an assertion of conservation by the conserving child to which the non-conserving child offered no resistance.
3. **Resistance** Conversations where the non-conserver offered an argument in support of their position at least once during the interaction.
4. **Explicit recognition** Conversations in which the non-conserving child gave some explicit indication that they had grasped the idea of conservation. While the non-conservers often began by offering some resistance to the conserver, in the course of the conver-
sation they either came to formulate an argument for conservation themselves, or else gave a clear expression of an *A-ha moment* such as “Oh, now I understand!!!”, “I see, you are right!!!”.

The advantage of coding interaction at this molar level of analysis is that it provides a clearer and stronger pattern of relationships between this feature of the interaction and the outcome for the original non-conservers on the post-test (clearer and stronger than for either specific speech-acts or other individual actions within the interaction, or for the relations between the gender composition of the pair and outcomes). Progress on the post-test was observed for almost every child who participated in an *Explicit recognition* conversation (89%) (Psaltis & Duveen, 2006), but never for those from *Non-conserving* conversations. And while about half of the children from No Resistance and Resistance interactions made progress on the post-test, they did so by producing no or little novelty on the post-test. Novelty was almost exclusively observed in the post-tests of children who had participated in *Explicit recognition* (73%, Psaltis & Duveen, 2006). *Explicit recognition* therefore is the conversation type which is uniquely associated with the type of interaction which stimulates the reflection which leads to cognitive development.

**Future Directions**

Future research needs to clarify a number of issues. Are the dynamics observed in these series of studies replicable with other tasks, at different ages and in different cultural contexts? What happens for example when the four pair type design is applied to male gendered marked tasks like mathematics (Cvencek, Meltzoff, & Greenwald, 2011). Should we expect an amplification of the dynamics already observed in the more neutral tasks? What if the design is applied to female gender marked tasks like language? Should we on the contrary expect annihilation of the observed dynamics compared to neutral tasks? In what ways varieties of gender identities (a ‘tomboy’ or a ‘sissy’) differentiate such dynamics? (see Zapiti, 2012). What happens if the task is more open ended, a moral judgment task for example (see Leman, 2010; Leman & Lam, 2008; Leman & Bjornberg, 2010) compared to a cognitive task where there is more clearly a right and wrong solution (cf. Quiamzade & Mugny, 2001)? The theoretical framework outlined earlier that articulates the four levels of analysis under a triadic epistemology of subject-object-other suggests that all these factors can indeed change the dynamics of communication since any change of relationship between subject-other-object changes communicative expectations.

Additionally, the issue of how age differentiates the observed gender dynamics in communication on the one hand, and the long term consequences of such communication dynamics for learning and cognitive development, on the other hand, is one of the more challenging ones (Leman, 2010). This is because it is possible with ontogenetic change in the social representations of gender that communicative dynamics manifest themselves in varying and changing ways.

There is evidence for example of a curvilinear relationship in the case of the development of gender identity with differentiation pressures being higher at the ages 3–7 (Leaper & Smith, 2004) then appearing to go in recession with a relevant decrease of such differentiation pressures in middle childhood and then reappearing again in adolescence. However, it is rather difficult to predict whether such differentiation pressures will be expressed in more hostile or benevolent ways in social interaction, knowing that in adolescence benevolent sexism (see Glick & Fiske, 1996) is often a different way of expressing an asymmetry that downgrades females. If behavioral styles of chivalry are
expressed in mixed gender dyads then the dynamics observed in the Mf and Fm dyads might be different, or for that matter even reversed, than the ones observed in first graders (Zapiti, 2012).

Finally, there is also the question of whether variations in conversation types will still be consequential for learning and cognitive development for older children, adolescents and adults as it is the case for younger children (Leman, 2010). There is at least some evidence to suggest that younger children of 6–7 compared to 11–12 year olds (Leman & Duveen, 1996) were unable to separate concepts of gender from notions of expertise. In other words, the younger children confounded epistemic authority with status something that was not found for 11–12 year old who seemed to be drawing on forms of reasoning which did not rely as strongly on features of the experimentally defined manipulations. Older children’s reasoning contained more elements of autonomous thought since their discussions showed less sensitivity to the experimental features of the task and a greater emphasis on the psychological, intentional or reasoning processes of their peer partner as the best means by which to decide upon the correct answer. This is in line with Piaget (1932) who describes older children as having a morality that is more autonomous from external authority. It could also be argued with Piaget again, that older children are in a better position to conceptually grasp the way in which gender as an external source of authority influences their communication, and by that becoming more able to control any such influence in the cognitive elaboration of the task at hand. This is because for Piaget taking consciousness of an action always lagged behind (décalage) practice and action itself. This décalage for example is present in the stage of concrete operations, where children become capable of forming co-operative relations, since they enact rules, which are actually defined through mutual respect, within the peer group, but, nevertheless, when asked about these rules, still have a rigid interpretation of them, considering them unchanged until around the age of ten (Piaget, 1932). When, however, children enter the formal operational stage, then they codify a system of rules in their playing groups and take joy in solving ‘legal disputes’, when they arise, while being aware that the rules can be changed, or new rules established through mutual consent. In a similar way gender expectations relating to communication could be codified and consciously grasped in older ages in that way allowing children to find a way to bypass the effects of gender on their learning and cognitive development (see also Leman & Lam, 2008; Leman & Bjornberg, 2010). Similar hypotheses could be derived from the theorization of George Herbert Mead about the emerging ability of children in late childhood to gain a more reflective sense of selfhood. Mead’s basic claim is that the mechanism for the development of self consciousness and selfhood is “the individual becoming an object to himself by taking the attitudes [perspectives] of other individuals toward himself within an organized setting of social relationships” (1934, p. 255). A typical indication of such reflective recognition of perspectival reciprocation (Martin & Gillespie, 2010) occurs when the older child’s interactions display negotiations and coordinations that take into consideration the way in which the child is regarded by others—e.g., including apologies for possibly offending others. Such indications indeed would suggest that the children have attained a stronger sense of agency now socially representing gender and its effects on communication not only in an enactive sense but also conceptually, thus being in a position to consciously make the relative communicative adjustments not only to regulate their communicative style through reflective use of symbolic recourses (Zittoun et al., 2003) but also to create an internal space of dialogue relatively isolated from actual social interaction that is based on internalized dialogue that retains the optimal characteristics of co-operative interactions. Hopefully, future research will shed light on this hypothesis.
Short Biography
Charis Psaltis is an Assistant Professor of Social and Developmental Psychology at the University of Cyprus. He holds a degree in Educational Sciences and a degree in Psychology. He received his MPhil and PhD in Social and Developmental Psychology from the Department of Social and Developmental Psychology, Faculty of Social and Political Sciences of the University of Cambridge. He also undertook post-doctoral research in the Oxford Centre for the Study of Intergroup Conflict at the Department of Experimental Psychology at the University of Oxford, where he studied intergroup contact between Greek Cypriots and Turkish Cypriots. His main research interests are social interaction and learning and development, genetic epistemology, social representations of gender, intergroup contact and intergroup relations, the development of national identities, history teaching and collective memory.

Endnotes
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1 For reviews and commentaries on Gerard Duveen's work as a whole see Volume 19, Issue 1 of Papers on Social Representations, SPECIAL ISSUE on SOCIAL REPRESENTATIONS AND SOCIAL IDENTITIES: INSPIRATIONS FROM GERARD DUVEEN. Retrieved from http://www.psych.lse.ac.uk/psr/.

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Further Reading


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