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Article *in* Journal of Educational Psychology · May 2015

DOI: 10.1037/a0037240

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Abstract

Despite the fact that most *competence*-relevant settings are *socially* relevant settings, the interpersonal effects of achievement goals have been understudied. This is all the more surprising in the case of performance goals, for which self-competence is assessed using an other-referenced standard. In the present research, performance-goals are conceived as a social tool for regulating interpersonal behaviors with more competent others. In the confrontation with a more (*vs*. equally) competent disagreeing partner, performance-approach goals (focus on approaching normative competence) should be associated with more dominant behavior, i.e., competitive conflict regulation, whereas performance-avoidance goals (focus on avoiding normative incompetence) should be associated with more submissive behavior, i.e., protective conflict regulation. Four studies give support to these predictions with self-reported conflict regulation measures (Study 1 and 3), evaluation of models associated to self-confirmation and compliance (Study 2) and conflict regulation behaviors (Study 4). Theoretical contributions to both the literature on achievement goals and that on socio-cognitive conflict, as well as practical implications for the issue of competence asymmetry in educational settings, are discussed.

Keywords: performance goals, relative competence, socio-cognitive conflict, interpersonal behavior regulation, self-evaluation threat.

To Confirm or to Conform?

Performance Goals as a Regulator of Conflict with More Competent Others

Most educational psychologists advocate the use of dynamic (i.e., based on *interactions* between learners) rather than static (i.e., based on *instructions* from educator to learners) learning systems (e.g., Johnson & Johnson, 2009; Patrick, Kaplan, & Ryan, 2011; Reyes, Brackett, Rivers, White, & Salovey, 2012). Indeed, interventions designed to promote and structure social interactions between learners are regularly proposed in the literature, be they concerned with classrooms (e.g., Muis & Duffy, 2013), small groups (e.g., Ramani, Siegler, & Hitti, 2012) or dyads (e.g., Buchs, Gilles, Dutrévis, & Butera, 2011). Such dynamic learning systems may be effective in that they allow learners to interact with more knowledgeable peers (Vygotsky, 1978) holding a different viewpoint (Doise & Mugny, 1978; see also Fawcett & Garton, 2005), thereby providing exposure to new knowledge. Yet, when facing a more competent disagreeing other, learners often fail to engage in a coordinated and constructive interaction (Cohen & Lotan, 1995), as the higher competence of the coactor may be perceived as a threat to self-evaluation (Muller & Butera, 2007).

In such a confrontation, when do individuals ignore the other's viewpoint, sticking to their own, and when, instead, do they comply? Some attempts to provide a micro-level analysis of disagreeing processes with more competent others have contributed to understanding why learners sometimes fail to co-regulate their conversational space (Barron, 2003), but the motivational determinants of these processes have never been investigated. This neglect is surprising, because confrontation with more competent others is a common situation, especially in educational settings (e.g., unequal-status interactions in classrooms; Cohen & Lotan, 1995), and understanding the motivational determinants of its regulation may be of utmost importance to design facilitating interventions. The present research aims at addressing this issue: We argue that performance goals—namely the desire to show

competence in comparison with others—can function as a regulator of the specific interpersonal behavior, *confirming* one's own point of view or *conforming* to that of the more competent other, displayed to cope with disagreement.

Achievement Goals and Interpersonal Behaviors

In competence-relevant settings, learners might adopt different achievement goals to regulate their behaviors (Elliot, 1999). Traditionally, scholars have distinguished two forms of achievement goals: mastery goals and performance goals (Dweck, 1975). The former goal is centered on the *acquisition* of competences, i.e., progressing (or not declining) on a task, whereas the latter one is centered on the *demonstration* of the competences, i.e., outperforming (or not being outperformed by) significant others.

Later, Elliot and Harackiewicz (1996) proposed that performance goals could be dichotomized into performance-approach goals (focused on attaining normative competence, i.e., related to the desire to perform better than others) and performance-avoidance goals (focused on avoiding normative incompetence, i.e., related to the desire *not* to perform worse than other). For instance, a student willing to reach the top three of his or her class would typically follow performance-approach goals while another willing not to be below the class grade average would follow performance-avoidance goals[1].

The trichotomous framework of achievement goals has fuelled nearly two decades of research, mainly focused on *intrapersonal*-level outcomes. For instance, in educational settings, achievement goals have proven to be robust predictors of academic performance (for a recent meta-analysis, see Van Yperen, Blaga, & Postmes, 2014), intrinsic motivation (Dinger, Dickhäuser, Spinath, & Steinmayr, 2013), or self-regulated learning strategies (Senko, Hama, & Belmonte, 2013). However, most *competence*-relevant settings are also *socially* relevant settings (e.g., classrooms, learning groups, peer tutoring) and, as educational psychologists refined their paradigms over the years, they "bec[a]me increasingly aware that

education [does] not take place in a social vacuum" (Husén, 1994, p. 5055). As a matter of fact, the quality of social interactions between learners (e.g., in social perspective taking, social cue processing, interpersonal trust) is indeed associated with academic accomplishment (for a review, see Wentzel, 2005), intrinsic motivation (Fraser & Fisher, 1982), and self-regulated learning (Whitebread, Bingham, Grau, Pino Pasternak, & Sangster, 2007).

Thus, social interactions are a core element in educational and learning processes, and it is therefore surprising that the *interpersonal*-level outcomes of achievement goals have remained largely understudied, and this in spite of the recurrent calls pinpointing the dearth of empirical research (Conroy, Elliot, & Trash, 2009; Darnon, Dompnier, & Poortvliet, 2012; Poortvliet & Darnon, 2010; Kaplan, 2004; Liem, Lau, & Nie, 2008). Even more surprising is the lack of studies on the interpersonal effect of performance goals in particular. Indeed, performance goals involve an assessment of success and failure using an *inter*-personal standard (i.e., self-/other-performance comparison), which is not the case of mastery goals, associated with an *intra*-personal standard (i.e., past/present self-performance comparison; Elliot, 2005). Accordingly, performance-approach and performance-avoidance goals are associated with keen attention to others' level of competence (Elliot, 1999).

In line with this analysis, it has been noted that primary (Boissicat, Pansu, Bouffard, Cottin, 2012), secondary (Trautwein, Lüdtke, Marsh, Nagy, 2009) and post-secondary (Sommet, Pulfrey, Butera, 2013) education is conducive to within-group social comparison, notably through the use of public and normative competence feedback (e.g., grades, Pulfrey, Darnon, Butera, 2013). In natural academic settings, both performance-approach and performance-avoidance goals were indeed found to relate to marked interest for social comparison (Darnon, Dompnier, Gilliéron, & Butera, 2010, see also Bounoua, Cury, Regner, Huguet, Barron, & Elliot, 2012) and particular focus on social status differences (Levy, Kaplan, & Patrick, 2004). In this regard, performance goals should particularly affect social

interactions. That is, in addition to driving self-regulation strategies (Elliot & Moller 2003), performance goals may also drive self-other regulation strategies. Let us see how.

Performance Goals and Agency in Interpersonal Behaviors

The interpersonal circumplex model has proven to be of substantial heuristic and integrative value for the conceptualization, categorization or assessment of interpersonal behaviors (Wiggins, 2003). This model—notably used in educational settings (e.g., Ojanen, Grönroos, & Salmivalli, 2005; Rodkin, Ryan, Jamison, & Wilson, 2013)—proposes a taxonomy of interpersonal behaviors as defined by two orthogonal dimensions: i) communal behaviors vary along an horizontal axis from friendliness to hostility; ii) agentic behaviors vary along a vertical axis from dominance to submission (Horowitz, 2004).

Importantly for the present research, Conroy and his colleagues (2009) have associated the interpersonal circumplex model with the achievement goal framework. As far as the horizontal dimension is concerned, they argue that performance goals are related to interpersonal behaviors having a low level of communion (i.e., cold / distant behaviors). However, concerning the vertical dimension, the authors remain cautious saying that "performance-based goals seem […] to lead to more agentic variations in interpersonal behaviors" before adding that "it would be important to determine how [valence] of achievement goals influence social behavior" (pp. 395-396). Drawing on their theoretical proposal, we argue that performance-*approach* goals relate to highly agentic (i.e., dominant) interpersonal behaviors, whereas performance-*avoidance* goals relate to poorly agentic (i.e., submissive) interpersonal behaviors.

On the one hand, in line with this idea, performance-approach goals have been found to be associated with a certain number of dominant interpersonal behaviors in academic contexts, such as antisocial behaviors in classroom (e.g., disrupting the class, annoying the teacher, breaking the classroom rules, Shim, Cho, & Wang, 2013), middle and high school

students' reduced interest in interethnic contact (Migacheva & Tropp, 2012), and the emergence of an autocratic leadership style within small learning groups (Yamaguchi, 2001). As a matter of fact—given their symmetry in terms of valence—performance-approach goals were found to be positively associated with self-reported measures of the behavioral activation system, defined as a behavioral facilitator in responses to environmental stimuli (Bjørnebekk, 2007; Elliot & Trash 2002; see also Bjørnebekk & Diseth, 2010).

On the other hand, performance-avoidance goals have been found to be associated with a certain number of submissive interpersonal behaviors, such as not participating in classrooms (Jansen, 2006), college freshmen's interaction anxiety (Valentiner, Mounts, Durik, & Gier-Lonsway, 2011), or high school students' reduced intentions of instrumental help-seeking through an increase in its perceived social cost (i.e., fear of being perceived as stupid by a peer; Roussel, Elliot, & Feltman, 2011). As a matter of fact—given, again, their symmetry in terms of valence—performance-avoidance goals were found to be positively associated with self-reported measures of the behavioral inhibition system, defined as a behavioral inhibitor in responses to environmental stimuli (Bjørnebekk, 2007; Elliot & Trash 2002; see also Bjørnebekk & Diseth, 2010)[2]

As mentioned in the opening paragraph, the fact that performance-approach and performance-avoidance seem to respectively predict social dominance and social submission might be due to the self-evaluation threat potentially elicited by other's competence (Muller & Butera, 2007). In educational settings, learners continuously engage in social comparison of competences, and are spontaneously prone to compare upward (Blanton, Buunk, Gibbons, & Kuyper, 1999; Huguet, Dumas, Monteil, & Genestoux, 2001). For performance goal-oriented learners, the superior competence of a social comparison target may be perceived as a particular threat and—if not reduced—upward social comparison becomes problematic for self-identity (Mugny, Butera, & Falomir, 2001), self-esteem (Tesser, 1988), and self-

competence (Quiamzade & Mugny, 2001). Thus, there are reasons to believe that, in interaction with a more competent other, performance goals will work as tool that regulates interpersonal behavior: Performance-approach would trigger an *appetitive* self-other regulation system, and performance-avoidance goals an *aversive* self-other regulation system.

Performance Goals as Regulators of Social Interaction with More Competent Others

How do performance-oriented learners behave when facing a high-achieving schoolmate, a more advanced pupil, or a higher-ranked student? As mentioned earlier, performance goals tend to be associated with social status goals (Hicks, 1997) and perception of more competent others as a threat to self-evaluation (Ryan & Pintrich, 1997). For instance, in a peer-tutoring context, namely problem-solving under the tutelage of an adult, Newman and Shwager (1995) showed that the endorsement of performance goals had deleterious effect on interpersonal exchanges. More broadly, while working with more competent others, elementary school students given performance goal instructions were unlikely to benefit from the interaction in terms of learning (Gabriele & Montecinos, 2001), and displayed low accuracy in comprehension monitoring (i.e, detecting their own comprehension failures, Gabriele, 2007).

The aforementioned studies suggest that performance goals qualitatively impact social interactions with more competent others. This phenomenon might be due to two concurrent mechanisms. First, performance goals—when associated with an *approach* orientation—may lead to a dominant form of social behavior regulation. For instance, it has been shown that performance-approach goal oriented individuals engaged in more deceptive information exchange (i.e., a highly agentic behavior) when a partner was presented as being of high (*vs*. low) competence (Poortvliet, Anseel, Janssen, Van Yperen, &Van de Vliert, 2012; see also Poortvliet, 2013). Second, performance goals—when associated with an *avoidance* orientation—lead to a submissive form of social behavior regulation. For instance, it has been

shown that performance-avoidance individuals engaged in more free-riding behaviors (i.e., a poorly agentic behavior, to the extent that the responsibility of the work is left to the partners) when a dyadic partner was perceived as being extremely (*vs*. mildly) competent (Schoor & Bannert, 2011).

In sum, the literature reviewed above suggests that another's superior competence *strengthens* the agency of interpersonal behaviors when individuals pursue performance-approach goals, and *weakens* it when individuals pursue performance-avoidance goals. In order to study these opposing processes, an ideal social behavior that disentangles dominant from submissive behaviors is socio-cognitive conflict regulation. Socio-cognitive conflict regulation corresponds to the interpersonal behavior displayed by an individual to cope with a disagreeing other (Doise & Mugny, 1984). As we will see in the next section, socio-cognitive conflict regulation might lead to dominant responses, i.e., individuals staying on their own position and invalidating that of the other, or—conversely—to submissive responses, i.e., individuals espousing the other's position and invalidating their own.

Conflict Regulation

In the study of learning, educational psychologists have long discussed the crucial role of social interactions in the dynamic of competences acquisition (for an historical and theoretical review, see Johnson & Johnson, 2009). They more notably stressed the importance of inter-individual disagreement (for a review, see Butera, Darnon, & Mugny, 2010; Levine, Resnick, & Higgins, 1993; see also Krugger, 1993). Given the usual complexity and plurality of teaching and learning materials, such disagreement—or socio-cognitive conflict—on a given task in which aptitudes are at stake is very frequent. The crucial role of socio-cognitive conflict has been documented in various topical domains such as scientific knowledge building (e.g., creationism *vs*. theory of evolution, Foster, 2012; climate change skepticism *vs*. global warming, Nussbaum, Sinatra, & Owens, 2012), mathematical problems solving

(Prusak, Hershkowitz, & Schwarz, 2012) and even the teaching of sport and physical activities (Lafont, 2012). From an applied point of view, several scholars showed that socio-cognitive conflict could be used in both peer-managed classroom discussions (Wu, Anderson, Nguyen-Jahiel, & Miller, 2013) and computer-assisted dyadic interactions (Roseth, Saltarelli, & Glass, 2011; Saltarelli & Roseth, in press).

Socio-cognitive conflict is characterized by a double uncertainty: on the one hand it calls individuals' mastery of the task into question (the "cognitive" part of conflict: "Is my answer correct?"; Piaget, 1952, 1985), while, on the other hand, it raises doubts about self-competence relative to that of the other (the "social" part of conflict: "Is the other more competent than me?"; Doise & Mugny, 1984). When the disagreeing other is perceived as an informational support, the "cognitive question" prevails. Hence, individuals tend to regulate conflict in an *epistemic* way, namely by considering the validity of each other's answers and working deeply through the problem. Conversely, when the disagreeing other is perceived as a threat for self-evaluation, the "social question" is more likely to prevail. Hence, individuals tend to regulate conflict in a *relational* way, namely by defending their competence (Darnon, Doll, & Butera, 2007). Thus, in order to study our general hypothesis that performance goals can function as a key determinant of the specific interpersonal behavior displayed during disagreement with more competent others, the present research will use relational conflict regulation as the target interpersonal behavior.

More precisely, when facing a threatening disagreeing partner, individuals have two possible ways to regulate conflict in a relational manner: i) they can *confirm* their viewpoint, while invalidating that of the other—namely a highly agentic, dominant behavior; ii) they can *conform* to the other's viewpoint, and subordinate their own—namely a poorly agentic, submissive behavior. The former case, which corresponds to a self-confirmatory strategy (i.e., resisting to others' influence; Butera & Mugny, 2001; Psaltis & Duveen, 2006), has been

designated in recent research as *competitive* relational regulation (Sommet, Darnon, Mugny, Quiamzade, Pulfrey, Dompnier, & Butera, 2014). In the study of dialogical argumentation within learning dyads, this corresponds to *adversarial argumentation* (disputational dialogue without openness to alternative viewpoint, Asterhan, 2013). The latter case, which corresponds to a mere compliance strategy (i.e., submitting to the other's influence, Quiamzade, 2007), has been designated as *protective* relational regulation (Sommet et al., 2014). In the study of dialogical argumentation, this corresponds to *quick consensus seeking* (cumulative dialogue without any critical exploration, Asterhan, 2013).

Conflict Regulation with More Competent Others

How do learners usually regulate conflict with a more competent contradictor? Most educational systems being organized in such a way that higher competent sources (e.g., tutors, parents, higher-achievers) provide knowledge to lower competent targets (e.g., tutees, children, lower-achievers), socio-cognitive theorist soon became interested in this question. Early findings showed that children facing disagreeing adults (Carugati, De Paolis, & Mugny, 1980-1981), one of their parents (Mugny, & Carugati, 1989), or more advanced peers (Mugny & Doise, 1978) made short-lived, superficially processed, copycat versions of their more competent other's opinion. Subsequent findings confirmed that, in a competitive context, participants confronted with a conflicting answer emanating from a more competent (*vs.* equally competent) partner embraced more his/her way of reasoning (Quiamzade, Tomei and Butera, 2000; for a review see Quiamzade & Mugny, 2001). The fact that individuals facing more competent disagreeing others regulate conflict in a protective way may be seen as a submissive interpersonal response to disagreement.

However, this evidence appears to be inconsistent in the literature, and in fact imitation elicited by more competent partners appears to vary as a function of context. For instance, boys experiencing socio-cognitive conflict with more competent girls have

consistently shown a general tendency to self-confirmation (for a review, see Duveen & Psaltis, 2013). In a similar fashion, experienced, fourth-year students facing a threatening disagreeing epistemic authority (i.e., teacher-researcher) tend to resist the message that he/she delivers (Quiamzade, Mugny, Dragulescu, & Buchs, 2003). The fact that individuals facing more competent disagreeing others sometimes regulate conflict in a competitive way shows that the occurrence of an interpersonal dominant response to disagreement is also possible.

Performance Goals as Regulators of Conflict with More Competent Others

In sum, the extant literature on conflict regulation shows that in some situations individuals tend to comply with more competent others, whereas in others they rather tend to sustain their own position. So far, however, no theoretical account of these variations has been put forward. We contend that performance goals could function as a critical factor to produce these variations. Thus, if we apply the idea developed above—that performance goals qualitatively impact social interactions with more competent others, so that performance-approach goals lead to a dominant form of interpersonal behavior regulation, and performance-avoidance goals lead to a submissive form of interpersonal behavior regulation—then we should hypothesize that in dealing with a more competent other (a) performance-approach goals should orient conflict regulation toward more agency (i.e., resistance / dominance), in other words, what Sommet et al. (2014) have termed competitive conflict regulation; (b) performance-avoidance goals should orient conflict regulation toward less agency (i.e., obedience / submission), in other words, protective conflict regulation.

Hypotheses and Overview

In this article, we predict that, when individuals interact with more competent disagreeing others, performance goals will serve the function of regulating interpersonal behaviors aimed at coping with such a disagreement. Specifically, four studies aim at testing two hypotheses: 1) performance-approach goals should more positively predict competitive

conflict regulation (self-confirmation) when facing a more competent partner than when facing an equally competent partner; 2) performance-avoidance goals should more positively predict protective conflict regulation (compliance) when facing a more competent partner than when facing an equally competent partner. Performance-goal orientation was assessed (Studies 1, 3 and 4) and manipulated (Study 2). Participants interacted with a fictitious disagreeing partner on the Internet (Studies 1 and 3), reacted to a bogus disagreeing opinion on a questionnaire (Study 2), or took part in face-to-face videotaped interaction with a disagreeing other (Study 4). In Studies 1 and 2, the partner was presented as having either similar or superior academic competence as compared to the participant. In Study 3, the partner was presented as having either similarly or better performed at a bogus competence test; moreover, a control condition with no competence feedback was added. In Study 4, participants interacted in dyads and took the same bogus competence test, and received either similar or asymmetrical scores. Finally, relational conflict regulation was a self-reported measure (Studies 1 and 3), a more objective model-preference measure (Study 2), or a behavioral measure (Study 4).

Study 1

Method

Participants. One hundred and thirty nine Bachelor students in Social and Human Sciences (78 females and 61 males) of a French-speaking medium-size Swiss University, with a mean age of 21.4 years (SD = 3.55), volunteered in Study 1.

Procedure. The study was conducted on the Internet. University students were invited by mail to participate in an Internet study on collaborative e-learning. Respondents thought they interacted with another student. This bogus partner was either presented as being a Bachelor student (same-competence partner condition, N = 78) or a PhD student (superior-competence partner condition, N = 61). Then, participants were given a text that either

described the "primacy effect" (i.e. when asked to memorize a list of words, people tend to better recall the *first terms*, $N = 69$) or the "recency effect" (i.e. when asked to memorize a list of words, people tend to better recall the *last terms*, $N = 70$). Following the reading of this text, participants answered a question about the effect trend (i.e., "Imagine yourself as learning a series of words. Immediately after this task, to what extent would you be able to recall the first / last words?") so as to ensure that they were committed to the assigned primacy vs. recency effect. Participants subsequently received a disagreeing reply from a fictitious partner. Participants who had read the text on primacy effect received an answer related to the recency effect and *vice-versa*. In an open-ended question, participants were invited to react to this answer.

Measures.

Performance goals. Prior to the "interaction", individual differences in goal orientation were assessed. Items were extracted from Elliot and McGregor's (2001) Achievement Goal Questionnaire (AGQ), validated in French by Darnon and Butera (2005). On a scale ranging from 1 (*not at all*) to 7 (*completely*), participants answered three items concerning performance-approach goals (e.g. "It is important for me to do better than other participants"; $\alpha = .91$, $M = 3.29$, $SD = 1.57$), and three items concerning performance-avoidance goals (e.g. "I just want to avoid doing poorly in this experiment"; $\alpha = .69$, $M = 2.97$, $SD = 1.21$). Correlation between the two aggregated scores was $r = .40$, $p = .001$.[3]

Self-reported conflict regulation. After having reacted to the bogus partner's answer, respondents were invited to report on their mode of conflict regulation. The six items were the ones used by Sommet and colleagues (2014): On a scale ranging from 1 (*not at all*) to 7 (*completely*), three items required the participants to indicate to what extent they regulated conflict in a competitive way (e.g., "did you try to show the partner was wrong"; $M = 3.74$, $SD = 1.58$). Another three items required them to indicate to what extent they regulated

conflict in a protective way (e.g., "did you comply with your partner's proposition"; M = 3.54, SD = 1.26).

Results

Factorial structure of the scales. In preliminary analyses, factor analyses were conducted on the six conflict regulation items via principal-components extraction with oblimin rotation. As can be seen in Table 1, these analyses revealed the expected two-factor structure. On the one hand, Factor 1 accounted for 48.5% of the variance and comprised the three competitive relational regulation items. On the other hand, Factor 2 accounted for 16.7% of the variance and comprised the three protective relational regulation items. Correlation between the two factors was r = -.39, p < .001. Due to the weak Cronbach's alpha associated with protective regulation, factor scores were used as dependant variables[4]. Competitive regulation score could range from -1.82 to 2.24 and protective regulation score from -1.83 to 3.15.

Overview of the linear regression analyses. Multiple linear regression analyses were conducted to examine the effects of both performance goals and partner's competence on the two self-reported relational conflict regulation factor scores. In preliminary analyses, gender, assigned text (primacy *vs*. recency), and age were included in the regression model. The only significant effect was an age effect on competitive regulation, β = -.17, $F(1, 128) = 4.20$, p < .05. Mean-centered age was therefore entered in further analyses. As our hypothesis amounts to an interaction effect, it is necessary to take into account the interactions between the covariate and the manipulated independent variable (Yzerbyt, Muller, & Judd, 2004). Thus, our model contained nine predictors: mean-centered performance-approach goals, mean-centered performance-avoidance goals, partner's competence (–.5 for same competence and +.5 for higher competence), the three first order interactions, the second order interaction,

plus the mean-centered age, and the interaction between mean-centered age and partner's competence, were included as predictors.

Self-reported competitive regulation. A main effect of performance approach goals was found. The more participants endorsed performance-approach goals, the more they reported having regulated conflict in a competitive manner, $\beta = .29$, $F(1, 129) = 9.51$, $p < .003$, $\eta^2_p = .07$. More interestingly, the predicted interaction between performance-approach goals and partner's competence was significant, $\beta = .19$, $F(1, 129) = 4.38$, $p < .04$, $\eta^2_p = .03$. When the partner was presented as being more competent, the higher the performance-approach goals, the higher the competitive regulation, $\beta = .49$, $F(1, 129) = 12.42$, $p < .001$, $\eta^2_p = .09$, whereas, when the partner was presented as being equally competent, such relationship was not observed, $\beta = .09$, $F < 1$, *n.s*. (see Figure 1). Although not part of our hypothesis, it is worth noting that the interaction between performance-avoidance goals and partner's competence was also significant, $\beta = -.24$, $F(1, 129) = 6.90$, $p < .01$, $\eta^2_p = .05$. Lastly, as reported above, age was negatively associated with competitive regulation, $\beta = -.17$, $F(1, 129) = 4.09$, $p < .05$, $\eta^2_p = .03$. No other effect reached significance.

Self-reported protective regulation. As expected, the interaction between performance-avoidance goals and partner's competence was significant, $\beta = .25$, $F(1, 129) = 6.65$, $p < .02$, $\eta^2_p = .05$. When the partner was presented as being more competent, the higher the performance-avoidance goals, the higher the protective regulation, $\beta = .39$, $F(1, 122) = 6.71$, $p < .02$, $\eta^2_p = .05$, whereas, when partner was presented as being equally competent, the reversed pattern was observed, $\beta = -.16$, $F(1, 122) = 1.56$, $p = .21$, $\eta^2_p = .01$ (see Figure 1). No other predictor included in the model yielded significant effects.

Discussion

In line with our first hypothesis, these results indicated that, when the partner was more competent, the more individuals pursued performance-approach goals, the more they

regulated conflict in a competitive way, which is not the case when the partner was equally competent. Furthermore, in line with our second hypothesis, results indicate that, when the partner was more competent, the more individuals pursued performance-avoidance, the more they regulated conflict in a protective way, which was not the case when the partner was equally competent. Additionally, the analyses revealed that performance-approach goals were associated with less protective regulation, when partner's competence was higher as opposed to equal. This phenomenon does not come as a surprise as, from a theoretical perspective, competitive and protective regulations are orthogonal constructs (i.e., self-confirmation and compliance could not coexist), and, from an empirical perspective, outcomes variables of the present study are negatively correlated. Thus, the present study supports the idea that individuals endorsing performance goal have two distinct manners to regulate interpersonal behaviors when dissenting with a more competent other: performance-approach goals lead to regulate conflict in a competitive way whereas performance-avoidance goals lead to regulate conflict in a protective way.

However, in Study 1, goals were measured as dispositional variables, which prevents us from establishing causal links between performance goals and relational conflict regulation with a more competent other. Study 2 will address this issue by manipulating goals. Moreover, in Study 1, we used a direct and quite transparent measure of conflict regulation. Self-reported measure may facilitate respondent to provide responses that they perceive as being more socially desirably, or as matching the purpose of the research (Darnon, Dompnier, Delmas, Pulfrey, & Butera, 2009; Razavi, 2001). Thus, one might argue that a less controllable outcome variable should be used to provide convergent validity to the present results.

Therefore, using a paper-and-pencil adaptation of our experimental paradigm, Study 2 tested the effect of manipulated performance goals and relative competence on the relative

preference between two models: a "confirmation model" (corresponding to competitive regulation) and a "compliance model" (corresponding to protective regulation). As compared to an equal competence partner, we hypothesize that when exposed to the disagreeing answer of a more competent partner, performance-approach goals should predict higher ratings of the "confirmation model" over the "compliance model" than performance-avoidance goals.

Study 2

Method

Participants. Seventy-three French vocational school students (agricultural and technical industrial training) were invited to participate in the experiment while having a free period in a study room of their school. Three participants had uncommon studentized deleted residuals on relevant measure and were dropped from the analysis. Cut off point set by Kutner, Nachtsheim, Neter and Li (2004), namely DFFITS > $2\sqrt{(p/n)}$, was used. The final sample consisted of 29 women, 40 men (1 missing data). Due to an oversight during questionnaire elaboration, participant age was not gathered; their school level corresponded to grade10-12, with an age typically ranging from 16 to18.

Procedure. Participants were told that study consisted in solving a problem. In doing so, they would have access to the answer of another student of their school. Subsequently, respondents were given either performance-approach goal instructions (i.e., you should try to perform better than the majority of students; $N = 36$) or performance-avoidance goal instructions (i.e., you should try to avoid performing less well than the majority of students; $N = 34$). These instructions were the ones developed and validated by Darnon, Harackiewicz, Butera, Mugny and Quiamzade (2007). After the goal induction, as in Study 1, participants read a text that described either the primacy effect ($N = 35$) or the recency effect ($N = 35$), and answered the same question about the effect trend. Then, they read the opinion of an alleged partner student. The "partner" was either presented as being in the same grade level (same-

competence partner condition; $N = 38$) or in a superior one (superior-competence partner condition; $N = 32$). His/her opinion followed the recency model for participants who had read the text on primacy and vice versa. Finally, participants were presented with two models following from the theory presented in the text. The graphs illustrated possible relationships between word position in the list and recall probability, namely a decreasing curve (corresponding to the primacy effect) and an increasing curve (corresponding to the recency effect).

Measures.

Model preference. Participants had to evaluate two models on three items as being correct, defendable and convincing (from 1 = *not at all*, to 7 = *completely*). A first model illustrated the respondent's answer ("the confirmation model"; $\alpha = .97$, $M = 4.60$, $SD = 2.15$) and a second the other student's answer ("the compliance model"; $\alpha = .95$, $M = 3.53$, $SD = 2.12$). The correlation between the two aggregated scores was $r = -.73$, $p < .001$. In the context of this study, as mentioned above, we wanted to depart from a self-reported measure and focus on the participants preference for confirmation of compliance. Thus, as far as competitive regulation is concerned, namely validating one's own answer *while* invalidating that of the other, it has been operationalized as the preference for the confirmation model over the compliance one. As far as protective regulation is concerned, namely validating other's answer *while* invalidating that of the self, it has been operationalized as the preference for the compliance model over the confirmation one.

Hence, a new variable was computed by subtracting the rating of the confirmation model from the rating of the compliance model ($M = 1.06$; $SD = 3.98$). A value of zero indicated that neither one's own position nor the partner's position was preferred. A positive value indicated preference for the predictive model that refers to sticking to one's own position, theoretically corresponding to competitive regulation. A negative value indicated

preference for the predictive model that refers to following the partner's point of view, theoretically corresponding to protective regulation.

Results

Multiple linear regression analyses were conducted with the goal variable (coded -.5 for performance-avoidance goals and .5 for performance-approach goals), the partner's competence (coded -.5 for same academic competence and .5 for higher academic competence) and the interaction on the model preference score. Preliminary analyses indicated that neither the assigned text (primacy *vs*. recency), nor gender of participant significantly predicted outcome variable. Thus, these variables were not included in further analyses. As expected, the predicted interaction between goals and partner's competence was significant, $\beta = .28$, $F(1, 66) = 5.60$, $p < .03$, $\eta^2_p = .08$., In comparison to performance-avoidance goals, performance-approach goals predicted more preference for the "confirmation model" over the "compliance model" (that is, a more positive difference score) when partner's competence was higher, $\beta = .39$, $F(1, 66) = 4.90$, $p < .03$, $\eta^2_p = .07$, than when it was equal, $\beta = -.17$, $F(1, 66) = 1.18$, $p = .28$, $\eta^2_p = .02$ (see Figure 2). No other effect reached significance.

Discussion

Congruent with those of study 1, the present results revealed an interaction between performance goals and the partner's academic competence on relational conflict regulation. When participants were confronted to a more competent partner, performance-approach goals predicted higher preference for a self-confirmatory model over the compliant model than performance-avoidance goals. Such a difference was not observed when participants were confronted to an equally competent partner. Thus, in this study where we manipulated goals and used preference for a confirmatory model over the compliant one as an outcome variable, the results correspond to a conceptual replication of study 1, to the extent that preferential

rating of the confirmatory model over the compliance model corresponds to the competitive relational regulation.

Nevertheless, one might argue that the partner's academic level is not a manipulation of relative competence *per se.* Indeed, it implies that participants infer from their partner's academic status the fact that s/he is similarly *versus* more competent on the task. Thus, in Study 3, participants received an explicit competence feedback following a bogus test: their fictitious partner was either presented as having a similar score as theirs (equal relative competence) or a higher one (superior relative competence). Furthermore, to test an important corollary of the basic hypothesis, we added a control condition where no score was given. Muller, Atzeni, and Butera (2004) reported that mere coaction, in the same way as upward comparison, elicits some threat to self-competence Indeed, not knowing the level of competence of a partner raises uncertainty about self-competence and generates a distractive focus on social comparison. Therefore, if it is true that in relational conflict people are concerned with competence, then individuals endorsing performance goals should regulate interpersonal behavior in a similar fashion regardless of whether the partner's competence is unknown or superior.

Using a slightly different experimental paradigm, where participants' spontaneous position in the conflict was freely expressed (i.e., participants' intuitive beliefs in the phenomenon at hand) instead of being induced by a text (participants read a text on the phenomenon at hand), as in the previous study, we hypothesize that: i) performance-approach goals should be more positively associated with competitive conflict regulation when the disagreeing partner has a higher or unspecified competence score than when the score is equal; ii) performance-avoidance goals should be more positively associated with protective conflict regulation when the disagreeing partner has a higher or unspecified competence score than when the score is equal.

Study 3

Method

Participants. Two hundred and eighty students in Social and Human Sciences of a French-speaking medium-size Swiss University volunteered in Study 3. Two participants had uncommon studentized deleted residuals on relevant measure and were dropped from the analysis. Because of our large sample ($N > 275$), the cut off point used in Study 2 was not conservative enough (Kutner et al., 2004). Thus, the cut off point set by Freund and Littell (1991), namely $rstudent_i = \pm 2.5$ (Davis, 2006), was used. The final sample consisted of 289 bachelor ($N_B = 151$), master ($N_M = 97$) and PhD ($N_{PhD} = 31$) students ($N_O = 6$ others ; 4 missing data), 201 women and 88 men, with a mean age of 23.6 years ($SD = 4.89$).

Procedure. The study was conducted on the Internet. University students were invited by mail to participate in a study on social representations of bipolar disorder. As in Study 1, respondents thought they interacted with another student. First, they were invited to fill in a multiple-choice questionnaire supposedly assessing their and their partner's knowledge in psychopathology. Once they had completed the test, they received their competence score and that of the "partner": In the same-competence partner condition ($N = 85$), both scores were 65/100; in the superior-competence partner condition ($N = 111$), the scores were 65/100 for the participant and 80/100 for the partner; and in the control condition ($N = 93$) no feedback concerning their or their partner competence was provided. Subsequently, participants were given a text describing bipolar disorder, which covered several issues, but did not address the issue of its etiology. In a closed-ended question, participants were then asked "to give their opinion about the cause of the bipolar trouble". They had two possibilities: a nurture-based ($N = 102$ participants opted for this option) or a nature-based explanation ($N = 187$ participants opted for this option). After having justified their choice, they received a disagreeing reply from their "partner". Participants in support of a nature-based, biological explanation received

an answer related to the nurture-based, environmental determinants of the disorder and *vice-versa*. In an open-ended question, participants were invited to react to this answer.

Measures.

Performance goals. Prior to the "interaction", participants filled out the same goal questionnaire used in Study 1 (α = .90, M = 3.09; SD = 1.43, for performance-approach goals; α = .79, M = 2.87, SD = 1.31, for performance-avoidance goals). The correlation between the variables was r = .52, p < .001.

Self-reported conflict regulation. After having reacted to the bogus partner's answer, respondents were invited to report their mode of conflict regulation on a questionnaire including the same items as in Study 1 (M = 3.95; SD = 1.24, for competitive regulation; M = 3.52, SD = 1.07, for protective regulation).

Results

Factorial structure of the scales. In preliminary analyses, factor analyses were conducted on the six conflict regulation items via principal-component extraction with oblimin rotation. As it can be seen in Table 1, factor analyses again revealed the two-factor structure, with Factor 1 accounting for 35.7% of the variance and comprising the three competitive relational regulation items and Factor 2 accounting for 22.8% of the variance and comprising the three protective relational regulation items. The correlation between the two factors was r = -.19, p < .002. As in Study 1, due to the weak Cronbach's alpha associated with protective regulation, factor scores were used as dependent variables[5]. Competitive regulation score could range from -2.56 to 2.31 and protective regulation score from -2.48 to 3.46.

Overview of the linear regression analyses. Multiple linear regression analyses were conducted to examine the effects of performance goals and relative competence on self-reported relational regulation factor scores. Partner's competence was contrast coded (Judd &

McClelland, 1989). In the contrast of interest, when partner's competence was equal, the variable was coded –2; when it was higher, it was coded +1; when it was non-specified, it was coded +1. The orthogonal contrast was also computed, coding 0 for equally competent partner,–1 for a more competence partner and +1 for the control condition. The model also included performance-approach and performance-avoidance goals, as well as their interactions with the contrasts. Preliminary analyses indicated that neither the expressed opinion (nature *vs*. nurture), nor the gender of participant, nor their academic level, nor their age significantly predicted the outcome variables. Thus, these variables were not included in further analyses. Our final model therefore contained twelve predictors: contrast 1, contrast 2, mean-centered performance-approach goals, mean-centered performance-avoidance goals, the five first order interactions and the two second order interaction.

Self-reported competitive regulation. As in Study 1, a main effect of performance-approach goals was found. The more participants endorsed performance-approach goals, the more they reported having regulated conflict in a competitive manner, $\beta = .15$, $F(1, 277) = 4.70$, $p < .04$, $\eta^2_p = .02$. More importantly, in line with our first hypothesis, the interaction between our contrast of interest and performance-approach goals was significant, $\beta = .14$, $F(1, 277) = 4.09$, $p < .05$, $\eta^2_p = .014$, while the interaction with the orthogonal contrast was not, $F(1, 277) = 2.77$, $p = .10$. Performance-approach goals were found to be associated more positively with competitive regulation both when partner's competence was higher, $\beta = .11$, $F < 1$, *n.s.*., and when it was non-specified, $\beta = .39$, $F(1, 277) = 10.81$, $p < .002$, $\eta^2_p = .04$, than when it was equal, $\beta = -.05$, $F < 1$, *n.s.*, (see Figure 3). No other effect reached significance.

Self-reported protective regulation. A main effect of performance-avoidance goals was found. The more participants endorsed performance-avoidance goals, the more they reported having regulated conflict in a protective manner, $\beta = .15$, $F(1, 277) = 4.54$, $p < .04$, $\eta^2_p = .02$. More importantly, in line with our second hypothesis, the interaction between our

contrast of interest and performance-avoidance goals was significant, $\beta = .14$, $F(1, 277) = 4.36$, $p < .04$, $\eta^2_p = .015$, while the interaction with the orthogonal contrast was not, $\beta = -.01$, $F < 1$, *n.s*. Performance-avoidance goals were found to be associated more positively with protective regulation both when partner's competence was higher, $\beta = .27$, $F(1, 277) = 4.93$, $p < .03$, $\eta^2_p = .02$, and when it was non-specified, $\beta = .24$, $F(1, 277) = 3.86$, $p = .05$, $\eta^2_p = .01$, than when it was equal, $\beta = -.06$, $F < 1$, *n.s*. (see Figure 3). Although not part of our hypothesis, it is interesting to note that the interaction between our contrast of interest and performance-approach goals was also significant $\beta = -.15$, $F(1, 277) = 5.21$, $p < .03$, $\eta^2_p = .02$ while the interaction with the orthogonal contrast was not, $\beta = -.03$, $F < 1$, *n.s*.. Moreover, the interaction between the two performance goals was significant, $\beta = .15$, $F(1, 277) = 3.97$, $p < .04$. No other effect reached significance.

Discussion

Consistent with what observed in studies 1 and 2, but adding a control condition for partner's relative competence, the present results show that performance-approach goals and performance-avoidance goals are respectively more associated with competitive and protective regulation when the disagreeing partner is presented as having superior or unspecified competence score than when presented as having identical competence.

Although results of studies 1, 2 and 3 were highly convergent, in these studies the disagreeing partner was always fictitious and the interaction was therefore quite limited. In Study 4, we aim at replicating our findings in a more ecological context while testing the same hypotheses on behavioral measures. Dyads of participants came to the lab and obtained bogus competence scores. In a first condition, so as to recreate the "same-competence partner condition" of the first three studies, the same score was given to both members of the dyad. In a second condition, so as to recreate the "superior-competence partner condition" of the first three studies, asymmetrical scores were given. This last scenario implies one participant

having a superior score and therefore—as a corollary—creates the supplementary case of one participant having an inferior score. A more competent partner should constitute a self-evaluation threat, whereas similarly or less competent ones should not, and therefore result in a similar pattern of behavioral regulation. Participants were then invited to discuss of a conflicting problematic. Independent judges were asked to count occurrences of competitive and protective regulation behaviors in the videotaped interactions. We hypothesize that: i) performance-approach should be associated with more competitive conflict regulation behaviors when the competence score obtained by the partner is higher than when it is equal or lower; ii) performance-avoidance should be associated with more protective conflict regulation behaviors when competence score obtained by the partner is higher than when it is equal or lower.

Study 4

Method

Participants. Seventy-eight volunteers were recruited in the Human Sciences building of a medium-size French-speaking Swiss University. Outlier analysis revealed that one observation deviated from the others. Since nonlinear regressions are used in this study, contrary to studies 2 and 3, Cook's Distance ($D > 2$) was used, as recommended by Xie and Wei (2003). The final sample consisted of 55 women and 22 men with a mean age of 21.9 ($SD = 3.21$).

Procedure. Same-sex dyads came to the lab to participate in a study on "social representations of mental illness". Firstly, the experimenter invited them to fill in the same bogus questionnaire used in Study 3. The test was conducted on a laptop connected to the Internet and, at its completion, a competence score appeared on the screen. There were two possibilities: both participants of the dyad received a bogus feedback of 65/100 (same competence partner condition, $N = 23$), or one participant of the dyad received a bogus

feedback of 65/100 (superior-competence partner condition, $N = 27$) while his/her partner received 80/100 (inferior-competence partner condition, $N = 27$). Participants had to publicly announce their score to the experimenter, so that the partner would listen. Subsequently, the dyads were given two scientific texts describing the etiology of Alzheimer's disease. One participant of the dyads read arguments in favor of a biological explanation (i.e., gene coding for Apolipoprotein E), whereas the other one read arguments in favor of an environmental explanation (i.e., social support). Finally, participants had to discuss about "what is the most probable cause of Alzheimer's disease". The experimenter left the lab and the interactions were videotaped.

Measures

Achievement goals. Prior to the interaction and to the feedback, participant filled in the same goal questionnaire used in studies 1 and 3 ($M = 2.68$, $SD = 1.39$, $\alpha = .85$ for performance-approach; $M = 3.00$, $SD = 1.39$, $\alpha = .77$ for performance-avoidance). The correlation between the two variables was $r = .45$, $p < .001$.

Occurrences of relational conflict regulation behaviors. Two independent blind judges coded the interactions of the thirty-nine videotaped discussions. The procedure was adapted from Asterhan and Schwarz (2009). Judges were asked to detect the occurrences of: i) denigration of the partner, i.e., unreasoned opposition with the position defended by the partner (labeled in Asterhan and Schwarz (2009) as "opposition", i.e., "overt verbal utterances of unreasoned disagreement", p. 383); ii) self-confirmation, i.e., unreasoned support of the position of participant's text (labeled in Asterhan and Schwarz (2009) as "rebuttal", i.e., "response [aiming at] weakening [other's] claim", p. 383); iii) compliance, i.e., unreasoned support of the position of partner's text (labeled in Asterhan and Schwarz (2009) as "agreement", i.e., "overt verbal utterances of unreasoned agreement" p. 383). It should be noted that, as our study is concerned with relational conflict regulation, which is theoretically

non-related to focus on the task, only categories corresponding to *unreasoned* statements (described to the judges as being non relevant: authoritative arguments, personal beliefs, etc.) in Asterhan and Schwarz (2009) were taken into account. The sum of the occurrences of denigration with the partner and self-confirmation corresponded to behavioral competitive regulation (M = .62, SD = .96). Occurrences of compliance corresponded to behavioral protective regulation (M = .38, SD = .63). Initial inter-rater agreement was good (κ = .76, p < .001, for behavioral competitive regulation, also κ = .76, p < .001, for behavioral protective regulation; Landis & Koch, 1997). All disagreements were then resolved by direct interaction between the judges. The correlation between the two variables was r = -.07, p = .56.

Results

Violation of the assumptions of standard linear regression models. Our dependent variables (i.e., behavioral competitive and behavioral protective regulation) being "count variables" (i.e., corresponding to a number of behavioral occurrences), observations are non-normally distributed. In such a case, linear regressions are no longer appropriate. Thus, we conducted a Poisson regression (King, 1988). Poisson regression assumes that: 1) the outcome variable's variance equals its mean (one of Poisson distribution propriety is the fact that E(X) = var(X)), and 2) independence of errors (as the other types of regression, the error term of one observation (ε_i) is assumed to be independent of the error term of another observation (ε_i)). Firstly, to control for mild violation of the first assumption, we had to use robust standard errors for the parameter estimates (Cameron & Trivedi, 2009). Secondly, as far as independence of errors is concerned, we calculated intraclass correlations. With such a distribution, Pearson's correlation coefficient has been shown to be the most reliable estimator (Tsagris, Elmatzoglou, & Frangos, 2012). Neither behavioral competitive regulations (r = -.03, p = .86), nor behavioral protective regulations (r = -.24, p = .41) were

found to be significantly correlated within dyads. Thus, analyses were conducted at the individual level (Kenny et al., 2006).

Overview of the Poisson Regression Analyses. Multiple Poisson regression analyses were conducted on both behavioral relational conflict regulations. Partner's competence was contrast coded. In the contrast of interest, when partner's competence was equal, the variable was coded –1; when it was lower, it was coded –1; when it was higher, it was coded +2. The orthogonal contrast was also computed: equal-competence partner was coded –1, inferior-competence partner was coded 1, and superior-competence partner was coded 0. The two other independent variables were performance-approach and performance-avoidance goals. In preliminary analyses, the chosen theory (nature *vs*. nurture), gender and age were included in the regression model. The only significant effect was a gender effect (coded –.5 for women and +.5 for men) on protective regulation behaviors, $B = 1.39$, Wald χ^2 (1, $N = 77$) = 5.77, $p <$ .02. Gender was therefore entered in further analyses. As in Study 1, the interaction between the covariate and the manipulated independent variable was also taken into account (Yzerbyt et al., 2004). Thus, the Poisson regression analyses contained fourteen predictors: the contrast of interest (participant's competence), the orthogonal contrast, mean-centered performance-approach goals, mean-centered performance-avoidance goals, the five first order interactions, the two second order interactions, plus gender, the interaction between gender and our contrast of interest and, lastly, the interaction between gender and the orthogonal contrast.

In line with our first hypothesis, the analysis revealed a marginal interaction effect between our contrast of interest and performance-approach goals, $B = .18$, Wald χ^2 (1, $N = 77$) = 3.65, $p < .06$, while the interaction with the orthogonal contrast was not significant, Wald $\chi^2 < 1$, *n.s.*. Performance-approach goals were found to be more positively associated with occurrences of competitive behavior regulation when partner's competence was higher, $B =$ .31, Wald χ^2 (1, $N = 77$) = 1.85, $p = .17$, than when it was both equal, $B =$ -.11, Wald $\chi^2 < 1$,

n.s. and lower, β = -.38, Wald χ^2 (1, N = 77) = 2.79, p = .10 (see Figure 4). No other effect reached significance.

In line with our second hypothesis, the analysis revealed a significant effect of interaction between our contrast of interest and performance- avoidance goals, B = .46, Wald χ^2 (1, N = 77) = 12.72, p < .001, while the interaction with the orthogonal contrast was not significant, Wald χ^2 (1, N = 77) = 1.88, p = .17. Performance-avoidance goals were found to be more positively associated with occurrences of protective regulation behavior when the partner's competence was higher, B = 1.10, Wald χ^2 (1, N = 77) = 18.04, p < .001, than when it was both equal, B = .12, Wald χ^2 < 1, *n.s.*, and lower, B = -.66, Wald χ^2 (1, N = 77) = 1.67, p = .20 (see Figure 4). As reported above, men (facing men) were found to regulate conflict in a more protective way than women (facing women), B = 1.39, Wald χ^2 (1, N = 77) = 5.77, p < .02. No other effects reached significance.

Discussion

Consistent with what observed in studies 1, 2 and 3, but in face-to-face interactions and using behavioral measures, the present results confirms the moderating role of relative competence on the link between performance goals and relational regulation. On the one hand, performance-approach goals tended to be more associated with competitive conflict regulation behaviors (i.e., unreasoned self-confirmation and disagreement) when the disagreeing partner was presented as being more competent than when presented as being equally or less competent. On the other hand, performance-avoidance goals were more associated with protective conflict regulation behaviors (i.e., unreasoned agreement) when the disagreeing partner was presented as being more competent than when presented as being equally or less competent.

Additionally, it should be noted that the analyses revealed an effect of gender: Women displayed less protective behaviors (toward women) than men did (toward men). In this

respect, it should be noted that the material of the task relates to the Medical Sciences, a field that is becoming increasingly feminized (Cheryan, 2012). It may well be that the women of our sample perceived the task as being slightly more adapted to their gender than did the men. Indeed, as far as feminine topics are concerned, as opposed to men, women have been found to be less compliant, monopolizing the conversation, and paying less attention to the interlocutor (Dovidio, Brown, Heltman, Ellyson, & Keating, 1988).

General Discussion

In dynamic learning systems (e.g., peer learning), disagreement with a more competent other (e.g., a more skilled student) is both a common and a hardly predictable situation. Indeed, in such circumstances, the self-evaluation threat elicited by the other's superior competence (Muller & Butera, 2007) can either induce highly agentic, dominant, contending responses (e.g., Psaltis, 2011), or rather the opposite, poorly agentic, submissive, eluding responses (e.g., Quiamzade et al., 2000). Reconciling those divergent tendencies, the present research shows evidence of the performance goals function as a mechanism regulating the direction taken by interpersonal behaviors a with more competent other: As compared to a disagreeing partner presented as having a similar competence, when a disagreeing partner is presented as having a superior competence, performance-approach are associated with more competitive conflict regulation (i.e., self-confirmation) and performance-avoidance goals are associated with more protective conflict regulation (i.e., compliance).

The present set of studies was designed to provide complementary evidence to this phenomenon. Firstly, regarding performance goals, Study 2—through the *manipulation* of goals—was characterized by a high degree of internal validity, whereas Studies 1, 3 and 4—through the *measurement* of goals—were more ecological. Secondly, regarding the procedure, Study 4—through the use of face-to-face videotaped interactions—was marked by a high degree of external validity, whereas Studies 1, 2 and 3—through the use of computer-assisted

interactions with a fictional partner—allowed a tighter monitoring of the conflict situation. Thirdly, regarding the materials, Studies 1 and 2 involved a disagreement on a cognitive psychology task (i.e., the serial position effect), whereas Studies 3 and 4 involved a disagreement on a medical science task (i.e., for Study 3, the etiology of bipolar trouble, where participant's initial position was freely expressed; and, for Study 4, the etiology of Alzheimer's disease, where participant's initial position was experimental induced), attesting of the robustness of the effect throughout contexts. Fourthly, regarding the outcome variable, socio-cognitive conflict regulation was assessed through a self-reported measure (Studies 1 and 3), a self-confirmatory (*vs*. compliant) model preference (Study 3), and a behavioral measure (Study 4), indicating an overall convergent validity. Finally, regarding relative partner's competence, it was indirectly (i.e., academic status; Studies 1 and 2) and directly (i.e., bogus feedback; Studies 3 and 4) manipulated.

Theoretical and practical contributions

The reported findings contribute in three important ways to research in educational psychology. The first contribution pertains to the link between achievement goals and interpersonal behaviors. Although peer interactions have long been regarded as a crucial factor in learning and teaching processes (Slavin, 1996, see also Bandura, 1971), and despite that the need for more research on such relationship has been emphasized by several recent articles (Darnon, Dompnier, & Poortvliet, 2012; Van Yperen & Orehek, 2013), studies on the matter remain scarce. In the context of socio-cognitive conflict regulation, the present results provide convergent evidence that performance goals can work as a regulator of interpersonal behavior: as opposed to non-threatening others—here in the case of horizontal (Studes 1-4) or downward (Study 4) social comparison (Mendes, Blascovich, Major, & Seery 2001)—when a partner is threatening for self-evaluation—here in the case of upward social comparison (Studies 1-4) or mere interaction (i.e., unspecified competence, Study 3; Muller et al.,

2004)—performance-approach goals activate an appetitive self-other regulation system, leading to highly agentic behaviors, namely competitive regulation; in parallel, performance-avoidance goals activate an aversive self-other regulation system, leading to poorly agentic behaviors, namely protective regulation.

Scaling up the present results, we believe that the approach presented in the present article integrate interpersonal behaviors beyond the scope of socio-cognitive conflict regulation, or even group behaviors (Park & Hinsz, 2012). Indeed, it could account for the fact that—due to the threatening nature of others' competence—performance-approach goals have often been found to lead to highly agentic interpersonal behavior, be it in scholastic contexts (e.g., active cheating behaviors, Pulfrey & Butera, 2013; negative attitudes toward helping others, Poortvliet & Darnon, 2014), or in organizational ones (e.g., reduced in-group team functioning, Dierdorff & Ellington, 2012). It could also account for the fact that performance-avoidance goals have been often linked to poorly agentic interpersonal behaviors, be it—again—in academic settings (e.g., low level of extraversion, Zweig & Webster, 2004; fear of negative peer judgment when seeking help, Tanaka, Murakami, Okuno, & Yamauchi, 2001), or in organizational ones (e.g., withdrawing efforts from the work group or evading task responsibility, Chi & Huang, 2014).

In sum, the moderating role of relative competence in the effects of performance goals on relational conflict regulation suggests promising avenues for future research linking performance goals to the full range of interpersonal behaviors (e.g., information sharing, leadership style, social loafing). Moreover, future research may consider the extent to which such relationships would hold in contexts were performance goals have a low degree of social utility (Dompnier, Darnon, & Butera, 2013; for instance in learning environment where selection is low or inexistent, such as amateur arts classes) or regulated by autonomous (*vs*.

controlled) reasons (Vansteenkiste, Mouratidis, & Lens, 2010; for instance in learning environment where structured competition is low or inexistent, such as recreational sports).

The second contribution pertains to the link between relative competence and relational conflict regulation, and solves the longstanding riddle of the direction of the interpersonal behaviors—more dominant *vs*. more submissive—that follow the disagreement with a more competent other. On the one hand, disagreements with more competent others, as compared to equal or more incompetent others, have been found to elicit a more protective conflict regulation (i.e., mere imitation without any further elaboration, for a review, see Quiamzade & Mugny, 2001). The present set of studies reveals that in fact such conflict regulation is *only* predicted by performance-avoidance goals. Yet, performance-avoidance goals endorsement has been shown to be higher for individuals seeing themselves as incompetent, e.g., subsequently to receiving poor exam grades (Senko & Harackiewicz, 2005, Study 1, see also Pulfrey, Buchs, & Butera, 2011), when one's own sense of competence is threatened (Brodish & Devine, 2009), and for members of low socio-educational strata (Jury, Smeding, & Darnon, 2013). Hence, our results allow a comprehensive re-interpretation of the studies showing the effect of others' superior competence on protective regulation: Performance-avoidance goals may have played a key role in orienting individuals facing a more (*vs*. less or equally) competent partner toward submissive behaviors.

On the other hand, disagreements with more competent others, as compared to equal or more incompetent ones, have been sometimes found to elicit more competitive conflict regulation (i.e., self-confirmatory responses). The most striking example is represented by the literature on gender and socio-cognitive conflict regulation (Psaltis, 2011) showing, in mixed-sex dyads, "a general tendency of male […] to resist being positioned as less knowledgeable" (p. 306). The present set of studies reveals that in fact such conflict regulation is *only* predicted by performance-approach goals. In this respect, in addition to unifying the

discrepant findings on socio-cognitive regulation when disagreeing with more competent others, our results allows a comprehensive re-reading of Psaltis and colleagues' studies (Psaltis & Duveen, 2006, 2007; Psaltis, Duveen, & Perret-Clermont, 2009): performance-approach goals may have played a central role in orienting participants (in this case, boys) facing a more competent partner (in this case, a girl) toward dominant behaviors.

The third contribution pertains to the effect of status in computer-mediated communication (CMC). Crowston and Kammerer (1993) argued that "the use of CMC promotes more equal exchanges by de-emphasizing social context cues or by permitting anonymity" (p. 6; for a critical review, see Spears & Lea, 1994). Hence, through the "democratization" of the discursive practices, CMC could reduce the occurrences of both dominant (Hiltz & Turoff, 1993) and inhibited (Kiesler, Siegel, & McGuire, 1984) interpersonal behaviors. In contrast with such positions, Study 1 and 3—where participants communicated with a bogus partner through the Internet—showed that, in such a context, relative competence information could actually predict both competitive (for performance-approach goals oriented individuals facing a more competent other) and protective (for performance-avoidance goals oriented individuals facing a more competent other) conflict regulations. These findings echo the ones of Weisband, Schneider and Connolly (1995), showing that the social influence dynamics as a function of relative status do not differ between computer-mediated and face-to-face communication. As Massive Open On-line Courses (MOOCs) become increasingly used in education, and the issue of distance interaction between students of such courses arises (Clarà & Barberà, 2013), our results caution that relative competence could produce the same undesirable effects in dematerialized as in materialized learning environment. This element is to be borne in mind for optimizing the pedagogy of distance learning systems.

Limitations

Some limitations should be mentioned. First of all, one of Study 3's simple slopes for the analysis on competitive regulation fell off the conventional alpha level, and one of the Study 4's predicted interactions was marginally significant. That being said, it should be noted that, our effects sizes being small to medium (i.e., $\eta_p^2 \in [.01, .08]$, Richardson, 2011), recent development in statistical analysis suggests that attempts of replication are impossible to be *always* successful (Francis, 2012). In the present case, the fact that the effects of all four studies appear—when taken as a whole—to be consistent, speaks to the coherence of our hypotheses.

Second, although the factorial structure of our self-reported conflict regulation scale revealed the predicted two factors, the score of protective regulation had a low Cronbach's alpha. The results obtained with these scales, however, were in line with those observed with model preference and behavioral measures; future research may combine these measures with other self-reported measures of interpersonal conflict-handling behaviors used in organizational psychology (Thomas & Kilmann, 1978), or the self-reported resistance and compliance assessments developed in the literature on social power (Nesler, Aguinis, Quigley, Lee, & Tedeschi, 1999).

Third, and finally, the ecological validity of experimental, lab-based research is usually low, and our paradigms make no exception. In particular, i) participants' competence levels were manipulated (instead of appraised), and ii) participants communicated with an unidentified (bogus) partner (instead of a known classmate). Thus, exploring the effect of learners' performance goals as moderated by their actual competence (e.g., inferred from their GPA) in a natural academic setting (e.g., during collaborative dialogues in classroom) would be a worthwhile follow-up study. Such a study would probably yield the same results as the present experiments, although with enhanced effects due to the higher involvement of participants in the interaction. It should be noted, however, that in actual social and learning

groups, each individual's academic competence is inextricably linked to a plurality of other variables (e.g., physical attractiveness, classroom climate, classroom mean academic level) concurring to define his/her social status; furthermore, this social status evolves in a complex manner as individuals get to know each other (Anderson, John, Keltner, & Kring, 2001). Hence, manipulating relative competence, using a bogus partner (Studies 1 to 3) and selecting students who were unacquainted to one another (Study 4), enabled us to reduce the impact of confounding variables. More generally, one might also argue that our participants were not in real, meaningful interaction situations, which might have resulted in unrealistic responses. Again, a study with freely interacting students, drawn from classes with known reputations in term of competence, would enhance the commitment of participants to their responses. It should be noted, however, that such a study should not reveal fundamentally different effects as compared with the present experiments; indeed, a vast literature on social comparison processes has long shown that even the most purified experimental comparisons have very real consequences for participants, in terms of self-esteem, self-worth, perceived threat, perception of the comparison target, and behavior (e.g., Muller & Butera, 2007; Quiamzade & Mugny, 2009; Tesser, 1988).

Practical implications for Education

Despite these limitations, the reported findings are the first to allow predicting the interpersonal behaviors that result from the disagreement with a more competent other: Performance-approach goals predict more competitive conflict regulation (i.e., self-confirmation), and performance-avoidance goals more protective conflict regulation (i.e., compliance). In addition to the two theoretical contributions discussed above, these findings also suggest an important practical implication. Let us first keep in mind that the ubiquity of competition at school—be it based on normative (e.g., in school: grading practice, Pulfrey et al., 2011) or institutional aspects (e.g., at university: selection process, Darnon et al., 2009)—

contributes to the endorsement of both performance-approach and performance-avoidance goals (for a review, see Murayama & Elliot, 2012) and, *in fine*, to display maladaptive interpersonal behaviors (for a review, see Poortvliet & Darnon, 2012). However, the present results suggest that, even when pursuing performance-approach and performance-avoidance goals, in a context of equalized perceived competences, the adoption of dominant and submissive regulations may be lowered. This is an important point to the extent that it provides an insight into the mechanism involved in several methods that have been developed to weaken the undesirable effects of competence asymmetry within groups or dyads (for a review of such methods, see Cohen & Lotan, 1995). For example, Aronson's (1978) "jigsaw classroom" is a technique that creates positive resource interdependence by distributing unique information to each group member, and therefore making the competence of each group member salient, which in turn requires to reflexively coordinate the distributed information to allow the group to reach its goal(s) (see also Darnon, Buchs, & Desbar, 2012). Another example is Tammivaara's (1982) "multiple ability treatment", where a supervisor stresses the fact that, when collectively carrying out a task, *no one* has *all* the necessary competences, but *each one* has *some* of the necessary competences. A final example, discussed more recently, is "reciprocal peer tutoring" (Ensergueix & Lafont, 2010), where same-age peers of equal competences work on a task while alternatively taking the role of tutee (instructed to *ask* the other) or of tutor (instructed to *explain* to the other). For an exhaustive description of status interventions that could be used by educators, please refer to Webb (2009).

As a conclusion, the present research reveals a hitherto unstudied function of performance goals in the regulation of self-other behaviors: When a disagreeing other is perceived as threatening for self-evaluation, here in the case of upward social comparison, performance-approach goals trigger highly agentic behaviors, self-confirmatory strategies and

competitive regulation, whereas performance-avoidance goals trigger poorly agentic behaviors, compliance strategies and competitive regulation. Such findings point the need for instructors, from schoolteachers to tutors and trainers, to reduce competence asymmetry within the groups they are been in charge of, so as to prevent the detrimental effects of conflict.

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Footnotes

[1] It is worth noting that, according to some authors, mastery goals can be divided into mastery-approach goals and mastery-avoidance goals (Elliot & McGregor, 2001; Van Yperen, 2006); however, the current discussion will not bring this distinction into play as it is not relevant for the present research.

[2] It should be mentioned that performance-avoidance goals have also been found to be positively associated—although to a lesser extent—to the behavioral activation system (Bjørnebekk, 2007, Elliot & Thrash 2002). Indeed, in specific contexts, Elliot and Thrash (2002) argue that performance-avoidance goal-oriented individuals could "attempt to override a general avoidance tendency by approaching normative competence (i.e., approach to avoid)" (p. 807). In this article, because we focus on the regulation of interpersonal behaviors, and more notably on that of conflict, whose approach (competitive regulation, i.e., confirming one's point of view) and avoidance (protective, i.e., conforming to another's point of views) components are orthogonal, this potential cross-relationship between performance-avoidance and behavioral activation will not be discuss any further.

[3] It should be noted that: i) performance-approach goals items used in Studies 1, 3 and 4, emphasize more normative comparison (i.e., "normative goals") than competence demonstration (i.e., "appearance goals"); ii) items of performance-avoidance goals items used in the same Studies do not include an explicit normative reference. However, as far as interpersonal context is concern, normative and appearance goals are suspected to predict similar effects (Senko, Hulleman, & Harackiewicz, 2011) and, more broadly, implicit and explicitly normative performance-avoidance goals seem to lead to the same pattern of results (Elliot & Murayama, 2008).

[4] Cronbach's alpha were $\alpha = .78$ of for competitive regulation, and $\alpha = .60$ for self-reported protective regulation. Due to the low α of the latter construct, we decided to use

factor scores as dependant variable. However, regression analyses on the aggregated scores led to the same pattern of results. Indeed, in Study 1 the predicted interaction between performance-approach goals and partner's competence on competitive regulation was significant, $\beta = .18$, $F(1, 129) = 3.93$, $p < .05$, $\eta^2_p = .03$, as was the predicted interaction between performance-avoidance goals and partner's competence on protective regulation, $\beta = .30$, $F(1, 129) = 9.69$, $p < .003$, $\eta^2_p = .07$.

[5] Cronbach's alpha were $\alpha = .69$ for competitive regulation, and $\alpha = .52$ for self-reported protective regulation. As in Study 1, due to the low α of the latter construct we decided to use factor scores as dependant variable. However, regression analyses on the aggregated scores led to the same pattern of results. Indeed, the predicted interaction between performance-approach goals and partner's competence on competitive regulation was significant, $\beta = .15$, $F(1, 288) = 4.93$, $p < .03$, $\eta^2_p = .02$, as was the predicted interaction between performance-avoidance goals and partner's competence on protective regulation, $\beta = .14$, $F(1, 128) = 4.534$, $p < .04$, $\eta^2_p = .02$.

Table 1

Conflict regulation items and their factor loading using principal component extraction with oblique rotation (oblimin).

	Study 1		Study 3	
When reacting to your partner's answer, to what extent did you…	Factor 1	Factor 2	Factor 1	Factor 2
…try to show you were right?	**.86**	-.27	**.83**	.01
…resist and maintain your initial position?	**.75**	-.31	**.69**	-.23
…try to show he(she) was wrong?	**.85**	-.30	**.81**	-.16
…think his(her) answer was more correct than yours?	-.38	**.78**	-.20	**.75**
…try to comply to his(her) opinion?	-.27	**.84**	.06	**.79**
…agree with his(her) own way of viewing things?	**-.68**	**.54**	-.43	**.58**
% of explained variance	*47.98%*	*16.78%*	*35.26%*	*22.95%*

Note. Factor loadings > .45 are in boldface.

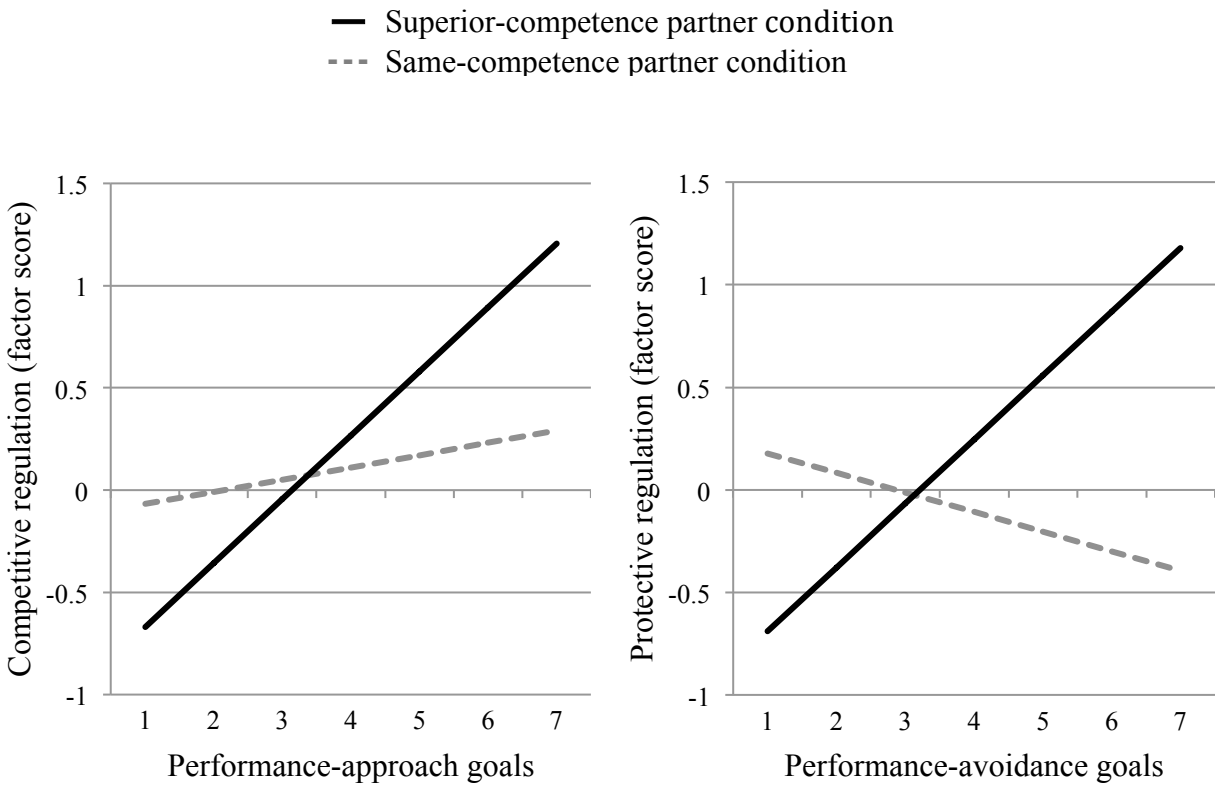

Figure 1. Competitive and protective regulation as a function of, respectively, performance-approach goals (on the left) and performance-avoidance goals (on the right) and partner's competence (Study 1).

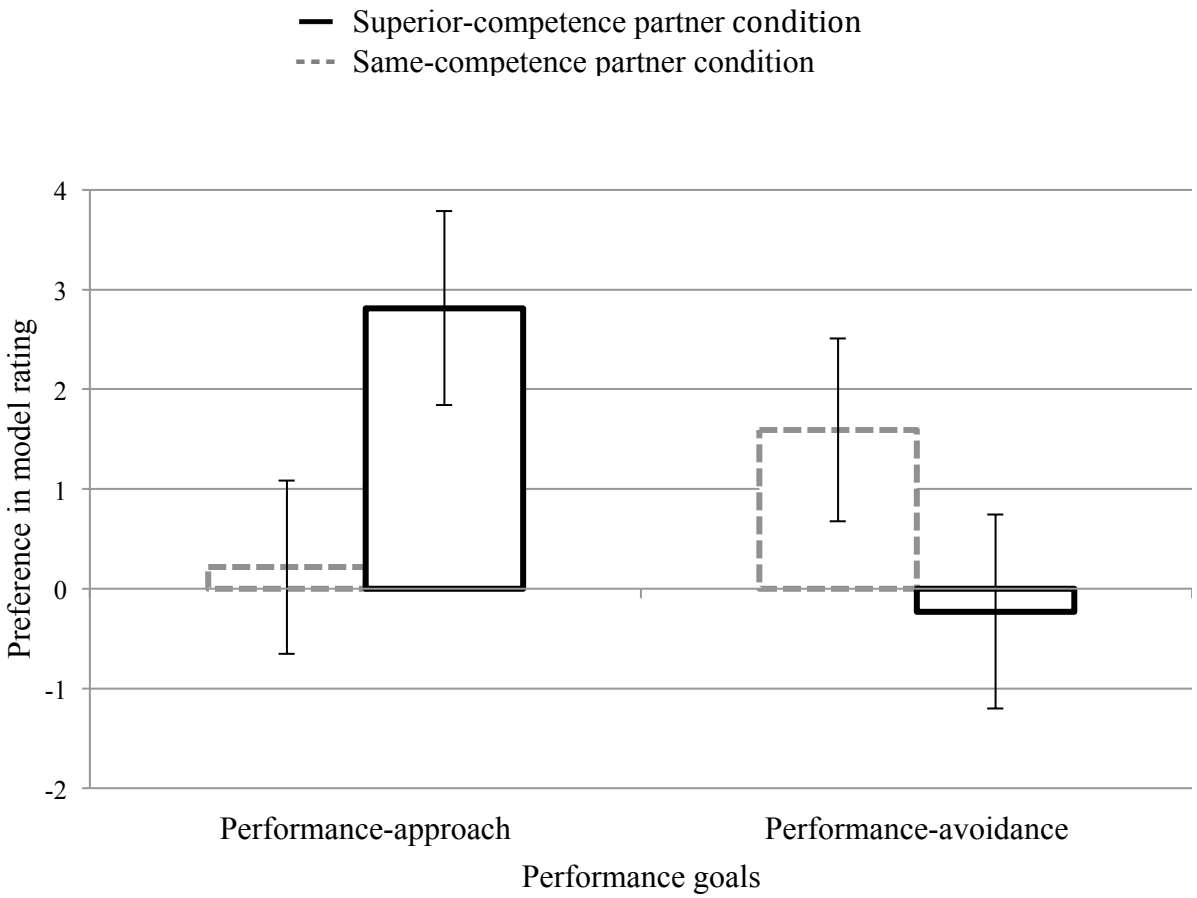

Figure 2. Preference for a model as a function of type of performance goals condition and partner's competence. A positive value refers to a preference for the "confirmation model", whereas a negative value refers to a preference for the "compliance model" (Study 2).

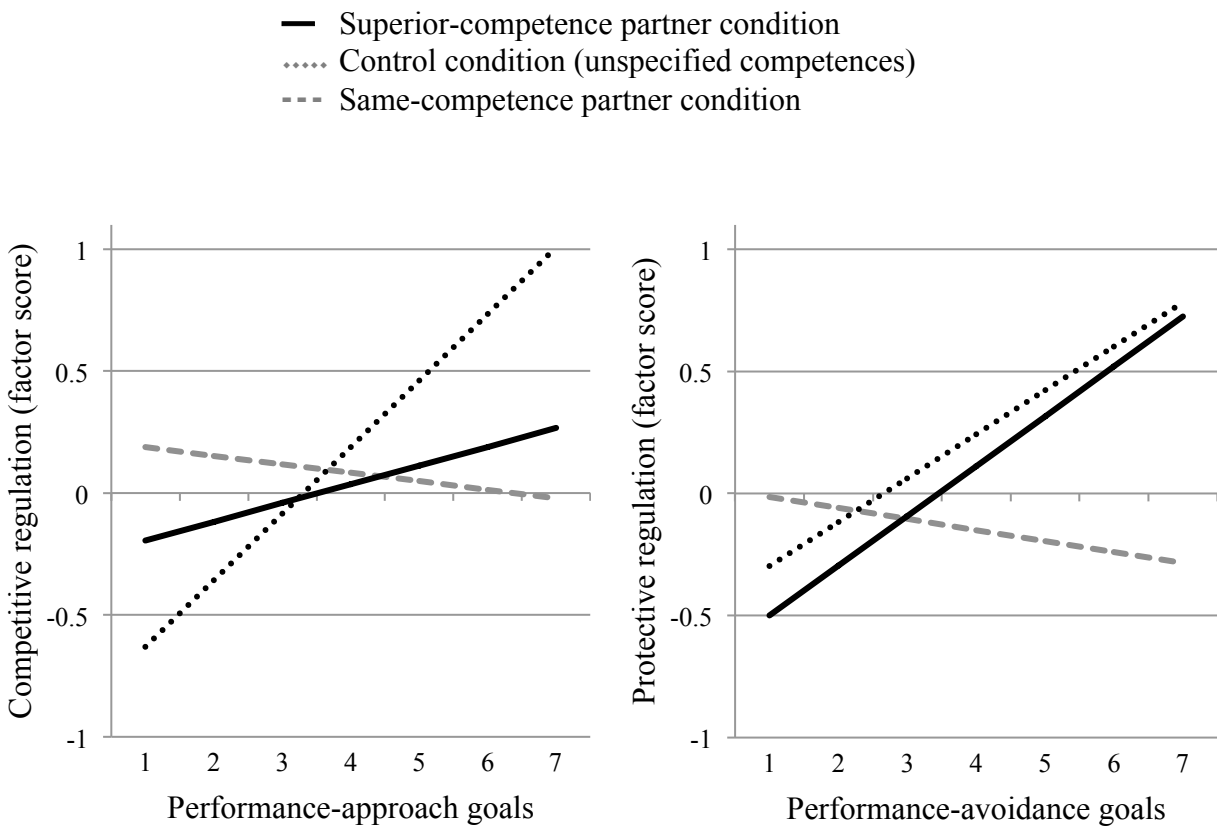

Figure 3. Competitive and protective regulation as a function of, respectively, performance-approach goals (on the left) and performance-avoidance goals (on the right) and partner's competence (Study 3).

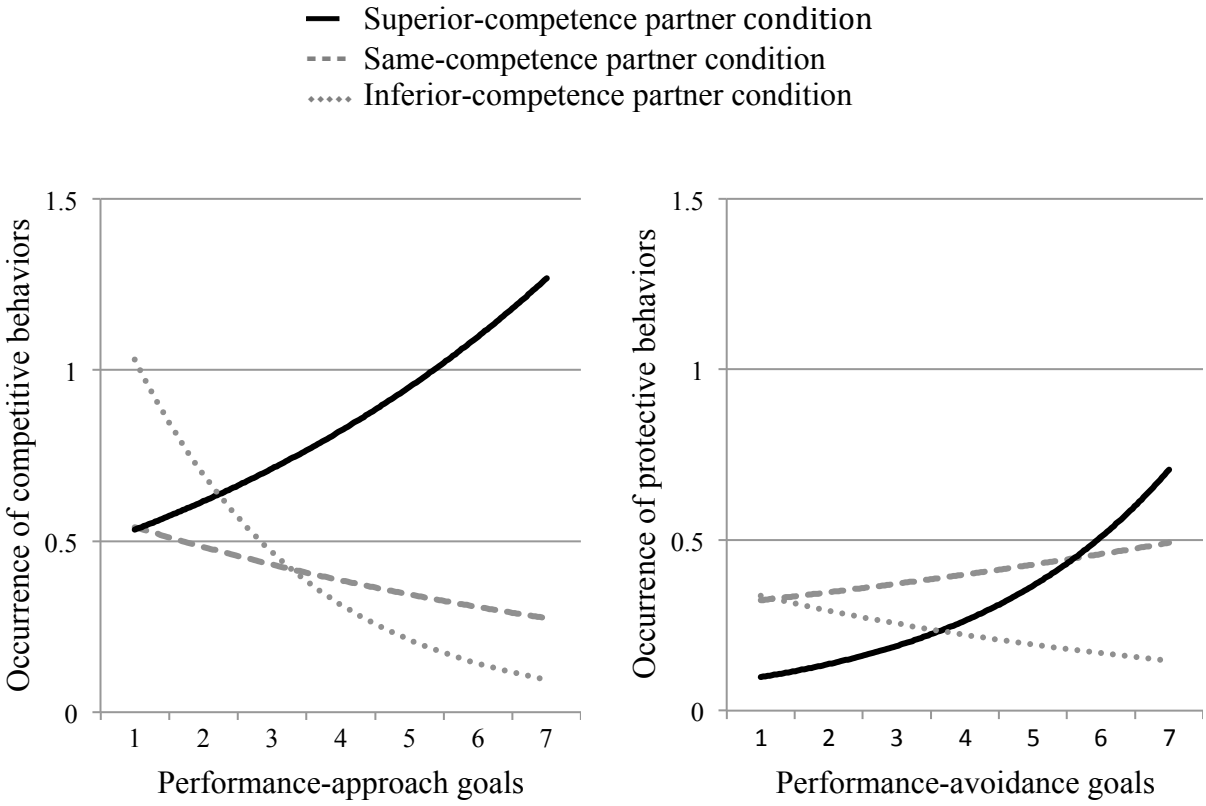

Figure 4. Occurrence of competitive and protective regulation behaviors as a function of, respectively, performance-approach goals (on the left) and performance-avoidance goals (on the right) and partner's competence (Study 4). Dependants variables of the Poisson regression equations (i.e., $\log(\mathrm{E}(Y_i \mid \mathrm{X})) = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \ldots + \beta_{p-1} X_{i,p} + \varepsilon_i$) add to be "unlogged" (i.e., $\Leftrightarrow \mathrm{E}(Y_i \mid \mathrm{X})) = \exp(\beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \ldots + \beta_{p-1} X_{i,p} + \varepsilon_i)$, which explains the exponential shape of the curves.