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Taking Nothing for Granted in Management Education: A Systemic Perspective on the Role of Reflective Questioning

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Questioning is one of the most critical behaviors in management education and learning. In this article we explore the antecedents, processes, and outcomes of reflective questioning, as a key element of management learning and education. Reflective questioning involves raising tentative, nonrhetorical questions. By reviewing and synthesizing the literature, we develop a model of reflective questioning in the form of a causal loop diagram. This model implies that reflective questioning can be taught through particular forms of management education, but is also contingent on the psychological safety of the group setting, the individual need for cognition, and challenging tasks and experiences. *Organization Management Journal*, 12: 76–86, 2015. doi: 10.1080/15416518.2014.1001056

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The key idea in this article arose from the following exemplary experience, which (we believe) many professors and other management educators will recognize:

I step into the meeting room, looking forward to spending the next hour with a group of students currently working on a tough, demanding assignment. The meeting starts and unfolds, and I try to help out by questioning assumptions, asking for explanations, and so forth. After about 20 minutes, students no longer seem interested, group dialogue stalls, and we decide to break up. Quite frustrated, I return to my office, wondering why bright students, over and over again, so easily take things for granted in the context of demanding assignments.

On the other hand, many students may be familiar with the following:

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Today we had a compelling class again. Our professor raised an interesting question about an axiom in micro-economics, this really got me thinking. I had several thoughts about it, but thought they were too weird to express in class. It's just that economic reality sometimes seems to be so paradoxical. But when I looked at Robert on my right, who was rolling his eyes in response to the difficult question, and Ann on my left, who was just eager to leave class, I felt insecure about my thoughts on the question raised by the professor. This economic axiom has been used over and over again. Had there been any fundamental misconception, it would already have been uncovered. So I decided to keep quiet.

These examples illustrate quite common experiences and also point at the key role of reflective questioning when striving for educational excellence. Many management educators pursue the idea that nothing should be taken for granted, that is, every single aspect of managerial processes and practices should be questioned and explored (e.g., Ackoff, 2002; Argyris, 1999; Grey, 2004; Learmonth, 2007). In this respect, a core competence of graduates from business schools would be the ability to raise thought-provoking, nonrhetorical questions (cf. Bain, 2004; Bateman, 1990; Hunkins, 1989). This type of questioning by managers or graduate (e.g., MBA) students serves to reflect on, and make sense of, key notions, observations, experiences, emotions, and events (Argyris, 1999; Boud et al., 1988; Seibert & Daudelin, 1999; Grey, 2004) that would help them become more responsible, moral, and critical management professionals in their organizations (Antonacopoulou, 2010; Cunliffe, 2002; Reynolds, 1999). Examples of nonreflective questions are “What was wrong with what you did?” and “Why did you not apply the tool I gave you?” Reflective questions are, for example, “Can you reflect a bit on the observation you just made?” and “Can you think of another way to address this challenge?” Nonreflective questions are likely to make people defensive and may not motivate them to develop their own answers and solutions, whereas reflective questions are open-ended and may encourage self-directed learning and problem

solving (cf. Bain, 2004; Burley-Allen, 1995). However, as our earlier examples illustrate, many management educators run into defensive responses such as mistrust and protectiveness when they raise (what they believe are) reflective questions (e.g., Argyris, 1999; Bain, 2004; Taylor, 2010).

Team reflection (e.g., De Dreu, 2002; Wiedow and Konradt, 2011), organizational learning and defensive behavior (e.g., Argyris, 1999; Argyris et al., 1985), and critical reflection in management education (e.g., Reynolds and Vince, 2004) have been widely studied, but an integrative framework that serves to understand how and when reflective questioning is (and should be) practiced in management education is not available. In this article, we therefore develop a model of reflective questioning—the act of raising nonrhetorical questions—as a key cognitive and social activity in any management learning process. The primary purpose of this model is to develop an integrated and systemic understanding (Senge, 1990) of how and why reflective questioning arises or fails to arise. The model is constructed in the form of a so-called causal loop diagram that can incorporate several conditions, variables, and feedback loops interacting with each other (Senge, 1990; Sterman, 2000).

As such, this article contributes to the literature by developing a model of the process of reflective questioning, which ties together aspects of questioning that previous studies explored separately. This contribution is important in view of the observation that management education, as practiced in many business schools, does not offer sufficient opportunities for students to reflect on their experiences, and tends to produce many graduates with underdeveloped skills in reflection and self-criticism (Mintzberg & Gosling, 2002; Roglio & Light, 2009). By developing a deeper understanding of reflective questioning, educators and practitioners may be able to assess and decide in what circumstances this type of questioning is useful and feasible, and how one can influence it.

REFLECTION AND REFLECTIVE QUESTIONING

The cognitive dimension of learning involves observing, thinking, digesting, and storing information (Huber, 1991), and the social process of learning is about exchanging and sharing information between people (cf. Fiol & Lyles, 1985). Several authors have argued that the cognitive approach to organizational learning is much more than the sum of individual learning processes (e.g., Berends et al., 2003; Fiol & Lyles, 1985; Miner & Mezas, 1996). In this respect, a cognitive approach cannot account for any changes in behaviors resulting from organizational learning (Berends et al., 2003). The conceptualization of learning as a purely individual cognitive process involves a so-called ecological fallacy (Baker, 1999), by mistakenly personifying organizational behavior that is actually arising from the interaction between multiple persons. As such, cognitive and group (or organizational) learning cannot be reduced to an either-or issue, but involves sequential and reciprocal processes

in which individual as well as collaborative acts feed back on each other (Frame, 2013; Jordi, 2011; Nesbit, 2012).

Some earlier work in this area explored the meaning of reflection and suggested positive effects on teaching and educational performance (e.g., Freese, 1999; Mäkitalo & Säljö, 2002). Other studies assessed whether educational programs stimulate reflection in terms of evaluation or hindsight (e.g., Sobral, 2000; van Velzen, 2004), leaving aside the exploration of personal knowledge constraints. Moreover, attitudinal and behavioral changes have been used as indicators for the presence or absence of reflection (e.g., Kember & Leung, 2000; Leung & Kember, 2003; Peltier et al., 2005). In addition, individual and group-level outcomes of reflection were separately tested in terms of educational performance, decision making, or problem solving (e.g., Mol et al., 2005; Carter & West, 1998; Schippers et al., 2003; Frame, 2013). In general, most previous studies were based on self-report measures, in which the meaning of reflection was (implicitly) assumed to be clear to respondents, though never explicated.

Reflection stems from the Latin verb *reflectere*, meaning “to bend” or “to turn back on the self.” The terms “re” and “flex” together denote a dialectical or contrasting movement, a recursive loop between an insider (subject) and an outsider (object) viewpoint (e.g., Barbre & Buckner, 2013). The notion of reflection has been explored in terms of metacognition (e.g., Flavell, 1967), self-reference (e.g., Bartlett & Suber, 1987), critical thinking (e.g., Brookfield, 1988), and double-loop or reflective learning (e.g., Argyris, 1976, 1999; Boyd & Fales, 1983; Schön, 1983, 1987). Definitions of reflection include, for example:

“The active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (Dewey, 1933, p. 9).

“An active process of exploration and discovery which often leads to unexpected outcomes” (Boud et al., 1988, p. 7).

“The process of making sense of what one is experiencing during a learning challenge” (Seibert & Daudelin, 1999, p. 3).

These definitions suggest that reflection involves the cognitive act of questioning (e.g., Matthew & Sternberg, 2009; Seibert & Daudelin, 1999; Vince, 2002). Since reflection arises from an inclination to question and doubt things previously taken for granted, it involves tracing beliefs and assumptions (Dewey, 1933), and is equated with dialectical reasoning, while its unsettling character arises from reframing “habits of mind” (Mezirow, 1998; 2000). Habits of mind can be defined as “a set of assumptions—broad generalized, orienting predispositions that act as a filter for interpreting the meaning of experience” (Mezirow, 2000, p. 17–18). Moreover, instantaneous experimentation (e.g., thought experiments) may serve to drive and trigger reflection (e.g., Cope, 2003; Ramsey, 2005; Rodgers, 2002; Schön, 1983, 1987).

The definitions previously listed suggest that reflection is a somewhat ambiguous notion. Despite this ambiguity, however, all definitions and interpretations of reflection tend to focus on “self” (i.e., one’s thinking about self-related feelings, observations, and experiences); furthermore, most definitions and descriptions of reflection are built around particular purposes, such as gaining a deeper understanding or building legitimacy (e.g., Cunliffe, 2002; D’Cruz et al., 2007).

At the heart of reflection is reflective questioning. We define reflective questioning as raising tentative nonrhetorical questions, an act of sensemaking that may serve to identify basic assumptions and blind spots (Mintzberg & Gosling, 2002) and (re)construct the frame of reference used by participants (Weick et al., 2005). The questioning subject may direct questions at him- or herself, or at another person. Both forms of reflective questioning tend to be rare, are contingent on power relations, and vary among individuals, depending on their inspiration, willingness, and skills (cf. Fenwick, 2008; Mintzberg & Gosling, 2002; Reynolds & Vince, 2004).

Reflective questioning often involves an unexpressed cognitive act of sensemaking, for example, by talking to oneself, or introspection (Jordi, 2011). Of course, sensemaking can also occur in social interaction (e.g., Brookfield, 1985; Elkjaer, 2004), for example, in work and management teams in which nonrhetorical questions are iteratively raised and discussed (cf. extrospection). Another important distinction is whether reflection is externally or internally challenged (e.g., triggered by external shareholders demanding change versus the executive team being dissatisfied about firm performance). Table 1 captures and illustrates these distinctions in reflective questioning.

Reflective questioning at the individual level therefore is a sensemaking process that is dialectical and self-referential in

TABLE 1
Classification of reflective questions

	Individual level (unexpressed)	Group level (expressed)
Self challenge	Introspective questions that stimulate deeper thinking (thought experiments)	Introspective questions that stimulate feedback by others (raising doubt)
External challenge	Extrospective questions emerging when one listens to feedback (comparison)	Extrospective questions that serve to respond to others (assessment)

nature. We next discuss key elements of reflective questioning at the individual level, and then turn to several other (e.g., group-level) dimensions and conditions as well as cause-effect relationships in the form of propositions. For a preview of the causal loop diagram on reflective questioning arising from this journey through the literature, we refer to Figure 1. Given its circular nature, every element in this figure can serve as a starting point in the process of reflective questioning.

OPENING UP THE BLACK BOX OF REFLECTIVE QUESTIONING

Doubt. As an act of sensemaking, reflective questioning essentially involves deconstruction or (re)construction of meaning. In this respect, King and Kitchener claim that questioning the act of knowing, by creating doubt, is what turns

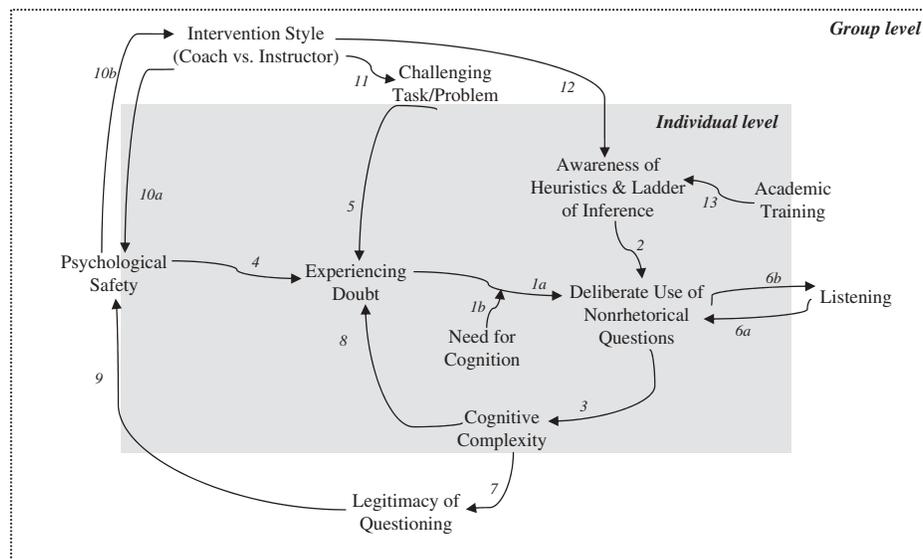


FIG. 1. Causal loop diagram of reflective questioning. The numbers correspond to the propositions as given in the text.

critical into reflective thinking (Ertmer & Newby, 1996; King & Kitchener, 1994; Kitchener, 1983). A sense of doubt often leads to some effort to calculate risk and restore a sense of certainty (Frame, 2013). However, by uncovering basic assumptions and blind spots, reflective questioning goes beyond assessing risk and uncertainty. Doubt and the questioning arising from it thus appear to be crucial for exploring one's general beliefs about knowledge and knowing (DeBacker & Crowson, 2006). We therefore adopt the Locke et al. (2008) notion of *doubt*—the experience of not knowing—to depict this raw epistemological competence driving reflective questioning at the individual level (cf. Ertmer & Newby, 1996; King & Kitchener, 1994).

The inclination toward doubt, by questioning the validity of claims about knowledge and knowing, is primarily developed in childhood (Flavell, 1999; Kuhn et al., 2000; Watson et al., 1998). Moreover, the ability to test validity claims later in life is also contingent on educational background and professional experience (Hogan & Maglienti, 2001; Schön, 1983; 1987) and can be stimulated by means of academic education (Freese, 1999; Ng, van Dyne, & Ang, 2009; Reynolds, 1999; Von Wright, 1992).

Deliberate use of nonrhetorical questioning. Recursively posing questions serves to explore (e.g., your own or someone else's) knowledge boundaries and search for new information, to shift boundaries and enlarge knowledge domains (Nesbit, 2012). To discriminate between different nonrhetorical questioning acts, Dewey (1933) outlined five forms of logic: suggesting, intellectualizing, hypothesizing, reasoning, and testing. Suggesting here means introducing new ideas (cf. abduction as defined by Charles Peirce) (Burks, 1946; Locke et al., 2008), based on previous observations. Intellectualizing involves making inferences by combining inductive premises. Hypothesizing refers to proposing possible relationships. Reasoning involves deducing premises from theory. Finally, testing is about validating theoretical insights by means of observations, experiments, and so forth. We expect that the level of sophistication and depth of questions raised by an individual—in any of these five forms—arise from a number of conditions and variables discussed in the remainder of this section.

Need for cognition. Human beings differ in their inclination to engage in reflection, particularly when they are facing unexpected events and puzzling experiences. DeBacker and Crowson (2006) found that a person's epistemological beliefs and motives determine the level of cognitive engagement (DeBacker & Crowson, 2006). People frequently engaging in nonrhetorical questioning thus appear to have a high need for cognition, a stable individual tendency to (not) engage in and enjoy effortful cognitive activity (Cacioppo et al., 1996). The term *cognition* refers to an intellectual ability, whereas the term *need* indicates an intrinsic motivation: Individuals with a strong need for cognition tend to seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships, and events in their world. By contrast, individuals with a low need for cognition tend to rely on others (e.g., experts),

cognitive heuristics, or social comparison to provide this structure (Cacioppo et al., 1996). The individual need for cognition starts with curiosity and questioning (Feist, 2012) and may evolve over the life cycle, but at any given stage (e.g., as a student) it tends to be rather stable.

We therefore infer that doubt is an important antecedent of reflective questioning, moderated by the need for cognition:

Proposition 1a. The more the student is able to experience doubt, the more the student will deliberately raise nonrhetorical questions.

Proposition 1b. The individual need for cognition moderates this effect: the higher the need for cognition, the stronger is the impact of doubt on nonrhetorical questioning.

Awareness of heuristics and ladder of inference. Reflective questioning draws on problem-solving heuristics, as well as the ability to handle different levels of abstraction. Problem-solving heuristics can involve heuristics for identifying, decomposing, and (re)modeling problems (e.g., Churchman, 1971; Hastie, 2001; Smith, 1988; Tversky & Kahneman, 1986).

The ability to handle different levels of abstraction draws on the so-called *ladder of inference*, which serves to disentangle different levels of abstraction used in a particular argumentation (viewed as a sequence of inferences): (a) directly observable data, (b) the cultural meaning of data, (c) interpretations drawn from cultural meanings, and (d) interpretations of interpretations (Argyris et al., 1985). The ladder of inference includes a recursive loop, implying that outcomes determine new inputs (Spee, 2005), and is instrumental in questioning the tacit understandings underlying everyday thinking (Schön, 1983). It may thus provide for renewed sensemaking of unfamiliar situations. As such, we assume that the meta-cognitive ability to understand and handle different levels of the "ladder of inference" is critical in reflective questioning.

Pulling the critical role of heuristics and inferences together, we argue that the student's level of awareness of problem-solving heuristics and the inference ladder affects the student's ability to raise nonrhetorical questions:

Proposition 2. The more the student is aware of problem-solving heuristics and the ladder of inference, the more the student is likely to deliberately raise nonrhetorical questions.

Nonrhetorical questioning enhances cognitive complexity. Nonrhetorical questioning serves to develop a deeper understanding; that is, the cognitive frameworks of participants become more complex. In this respect, questioning tends to start from a personal frame of reference, a related set of meanings to define and construe a situation or problem (Walsh, 1995; Weick, 1995). By making their frames of reference explicit, students can uncover implicit standards and assumptions (Ulrich, 1977) and question their validity (Lyles & Mitroff, 1980) which, in turn, may change their frames of reference (Millar & Tesser, 1986; Tsang & Zahra, 2008). When the latter occurs, the

students defines the object or problem they are making sense of differently (Boland et al., 2001). Because of its ability to deconstruct and (re)construct meaning, nonrhetorical questioning facilitates the synthesis of multiple frames of reference. The use of multiple frames of reference has been termed *cognitive complexity* (Andrews & Halford, 2002; Curşeu & Rus, 2005). Thus, we suggest that nonrhetorical questioning enhances the use of multiple frames of reference (i.e., cognitive complexity):

Proposition 3. The more the student deliberately engages in nonrhetorical questioning, the more cognitively complex the student's thinking becomes.

Other Conditions and Outcomes of Reflective Questioning

In addition to opening the black box of reflective questioning at the individual level, the literature suggests other critical antecedents and outcomes of reflective questioning—particularly at the group level. Figure 1 provides an overview of these group-level antecedents and outcomes. The key processes at the individual level are nested in the multilevel model in this figure.

Psychological safety. The acceptance and appreciation of reflective questioning vary among situations (cf. Reynolds & Vince, 2004): In some social settings, questioning is highly appreciated, whereas in others it is highly problematic. In this respect, studies of learning behavior in work teams suggest psychological safety—that is, a perception of low risk when speaking up in public—is critical for team learning and dialogue (e.g., Edmondson, 1999; Tucker et al., 2007). When participants feel safe, they are more likely to show their vulnerability and question things previously taken for granted. As such, the perceived level of interpersonal safety signals whether teams are able to benefit from individual contributions or not (Edmondson, 1999, 2002; Barnes et al., 2012). The psychological safety of the social context therefore appears to be a critical condition of whether an individual participant is likely to raise reflective (i.e., nonrhetorical) questions. Psychological safety is a group-level condition that can be measured at the individual level, as the individual's perception of risk when speaking up in public (Edmondson, 1999; Tucker et al., 2007). We infer the following cause–effect relationship:

Proposition 4. The more the student perceives the group setting as psychologically safe (i.e., low risk when speaking up in public), the more this student will be able to experience doubt.

Major challenges generate doubt. The literature suggests that major challenges and problems, for example, in the form of knowledge gaps, provoke cognitive processing (Klahr & Simon, 1999; Ng et al., 2009) and possibly also cognitive change (VanLehn, 1996). Rather than assuming that major challenges directly affect or drive questioning activity, we argue that the underlying mechanism here is the generation of doubt. That is,

major challenges provoke the experience of doubt. For example, a highly demanding new project may create doubt about one's own competences and performance, or those of others. We thus offer the following hypothesis:

Proposition 5. The more the student is exposed to challenging tasks and problems, the more the student is likely to experience doubt.

Reciprocity of questioning and listening. In groups that work on collaborative tasks, students can raise questions and obtain input and feedback regarding their assignment and learning process. In these group meetings, students and academic supervisors participate. In such settings, individual cognition and reflection exists in and through social interaction (Brown & Duguid, 1991; Rulke & Galaskiewicz, 2000; Scott & Brown, 1999). Vygotsky's (1978) work suggests that higher cognitive functions are strongly influenced by social interaction. Indeed, many studies demonstrate that social interaction is likely to enhance the engagement in cognitive processing (Elder Hinshaw & Sakalli Gumus, 2013; Kuhn et al., 1997; Kuhn & Lao, 1998; Vince, 2002; Williams et al., 2009). Pivotal in this social interaction is the reciprocity of meaningful dialogue, that is, reflective questioning and listening (cf. Jacobs & Coghlan, 2005; Jordi, 2011; Marshall et al., 2010; Rautalinko & Lisper, 2004). We assume that listening is a group-level construct that refers to the responsive function of listening behavior by the "other" participants in a group setting, such as peers and academic supervisors (see also Figure 1). This serves to argue that well-developed listening skills of the other participants will facilitate and motivate the individual participant to raise nonrhetorical questions that go beyond repeating and paraphrasing (Barnes et al., 2012; Kuhn et al., 1997; Vince, 2002). Moreover, the act of nonrhetorical questioning itself will also motivate other participants to listen. Thus, we propose:

Proposition 6a. The more skilled the group members (i.e., students and academic supervisors) are in listening, the more the individual student is likely to deliberately raise nonrhetorical questions.

Proposition 6b. The more the individual student deliberately raises nonrhetorical questions, the more the group members are likely to engage in listening.

Legitimacy of questioning at group level. Reflection processes tend to generate a so-called legitimacy effect (e.g., Cunliffe, 2002; D'Cruz et al., 2007), which can be translated into our model as follows: If nonrhetorical questioning enhances cognitive complexity, it also builds its own legitimacy. In this respect, legitimacy is a group-level effect arising from the collective experience of reflective questioning and its impact on individual thinking and understanding. That is, a sustained effort in reflective questioning that enhances cognitive complexity (e.g., in supervised project assignments on which a team of students works for the entire semester) also makes the act of raising reflective questions more legitimate. We thus offer:

Proposition 7. The more the (individual students in the) group experiences how nonrhetorical questioning enhances the cognitive complexity of their thinking, the more legitimate the act of raising nonrhetorical questions becomes.

Feedback relations. Figure 1 provides an overview of the model developed thus far. This figure also includes two cause–effect relationships not previously discussed. For one, when a student develops an increasingly complex cognitive framework (understanding), the student is also likely to accept and be aware of their doubt; by contrast, a student who has not deepened his or her understanding (e.g., of his thesis topic) will tend to avoid the awareness of not knowing. Thus, we suggest:

Proposition 8. The cognitive complexity of thinking positively affects the experience of doubt.

The other causal mechanism in Figure 1 refers to the impact of legitimacy on psychological safety. In this respect, high legitimacy of nonrhetorical questioning within the group will enhance the psychological safety perceived by its participants, whereas a low legitimacy of questioning will undermine psychological safety. In addition, when participants in the group develop increasingly complex cognitive frameworks, they are also likely to become more receptive and supportive toward people talking about doubt. Therefore:

Proposition 9. The legitimacy of nonrhetorical questioning positively affects the psychological safety perceived by the individual student.

Intervention style of supervisor. Students may work in groups without direct help or supervision from teaching staff. However, in tutorials and similar settings, a group of students meets with an academic supervisor present. For this type of setting, the literature suggests that the intervention (or supervision) style of the academic supervisor matters. In this respect, previous work on dialogue in educational and work contexts (e.g., Edmondson, 1999; Fenwick, 2008; Gray, 2007; James, 1996) emphasized the role of intervention style and the importance of feeling empowered in reflective questioning. Academic supervisors who provide appropriate space for experiential learning among students, by exchanging the instructor role for a role as coach, are more likely to address and actively develop the peer review skills of their students (Kolb & Kolb, 2005; Romme, 2003). This provides learning spaces in which learning behavior is contingent on the student's learning style and social environment (Cranton, 2006; Kolb, 1981; Kolb & Kolb, 2005). We thus suggest two cause–effect relationships. For one, a more instructor-oriented (or teacher-centered) intervention style typically implies a higher risk for students to speak up, that is, a lower level of psychological safety (Kolb & Kolb, 2005); by contrast, a more coaching-oriented intervention style (e.g., to a large extent drawing on nonrhetorical questioning) will empower students and reduce the risk to speak up, as perceived throughout the group (James, 1996). In addition, a challenging

but safe atmosphere may also motivate the academic supervisor to adopt and sustain a more coaching-oriented intervention style (cf. Cotton, 2001; Elder Hinshaw & Sakalli Gumus, 2013; James, 1996; Kolb & Kolb, 2005). Thus, we suggest:

Proposition 10a. The more the academic supervisor adopts a coaching-oriented (rather than instructor-oriented) intervention style, the higher will be the psychological safety perceived by students.

Proposition 10b. The higher the psychological safety, the more likely it is that the academic supervisor will adopt and sustain a coaching-oriented (rather than instructor-oriented) intervention style.

The reciprocal relationship between the academic supervisor's intervention style and students' perceived psychological safety signals role interdependence. To develop real-world knowledge and realistic expectations, students and managers (to be) should build on their own perceptions and experiences (DeFillippi, 2001). This requires a facilitating, supportive intervention style from management educators. As such, a coach makes students responsible for their own learning by allowing them to control and set their own learning goals (Conklin & Hart, 2009; DeFillippi & Milter, 2009). In this way, students learn to construct meaning from their own point of view, which helps them to grow personal skills in dealing with and adapting to complex, real-world challenges (DeFillippi & Milter, 2009). In this respect, supervisors adopting a coaching-oriented intervention style are more likely to expose students to ambiguous and open-ended assignments, which in turn are likely to raise doubt and enhance (self-)inquiry—as suggested in Proposition 5. We therefore propose the following cause–effect relationship:

Proposition 11. The more the academic supervisor adopts a coaching-oriented (rather than instructor-oriented) intervention style, the more challenging the task or problem addressed by students is likely to be.

Finally, we suggest two rather obvious cause–effect relationships. The first one says that a more coaching-oriented intervention style of the academic supervisor serves to make students more aware of problem-solving heuristics and the ladder of inference. The second relationship implies that academic training in research methodology and critical thinking (e.g., Browne & Keeley, 2012) is likely to enhance individual awareness of problem-solving heuristics and abstraction levels in inferencing.

Proposition 12. The more the academic supervisor adopts a coaching-oriented (rather than instructor-oriented) intervention style, the more the academic supervisor will be aware of problem-solving heuristics and the ladder of inference.

Proposition 13. The more the student has been exposed to academic training in research methodology and critical thinking, the more the student will be aware of problem-solving heuristics and the ladder of inference.

THEORETICAL SYNTHESIS

The argument thus far served to identify a number of conditions and cause–effect patterns that affect nonrhetorical questioning. Figure 1 provides an overview of the model that includes all key relationships defined earlier. This model depicts how and under which conditions reflective questioning can fight “taking things for granted,” drawing on a causal loop diagram (Senge, 1990; Sterman, 2000) that shows several conditions and feedback loops interacting with each other. Key (initial) conditions affecting whether or not reflective questioning arises in a particular group are the need for cognition of each individual student, any academic training in research methodology or critical thinking that students have taken, and the coach/instructor intervention style initially adopted by the academic supervisor. The individual need for cognition (i.e., inclination to engage in introspection) tends to be rather inert at any given stage of the individual life cycle. This implies that if most students in a particular group have a low need for cognition, any attempt to build a group culture of reflective questioning is likely to fail. Similarly, a group of students that did not have any previous training in academic and critical thinking will be severely handicapped toward reflective questioning. Finally, groups with instruction-oriented academic supervisors are not likely to truly engage in nonrhetorical questioning, also because the tasks and problems these groups work on tend to be less challenging and demanding. Evidently, these three initial conditions can, to some extent, compensate for each other. For example, when students (with a high need for cognition) have not gone through any initial training in critical thinking or research methodology, the academic supervisor can still be successful in developing a group practice of reflective questioning, by spending more time and effort as a role model with this group.

A major feedback loop at the individual level (1–3–8) involves doubt affecting the use of nonrhetorical questions, which in turn enhances cognitive complexity that then facilitates the experience of doubt again. This loop is nested in a feedback loop at the group level, also incorporating psychological safety and the legitimacy of questioning (1–3–7–9–4). As such, individual processes coevolve with how legitimate questioning is at the group level and how psychologically safe the group is.

In addition, the diagram involves a feedback loop that depicts the reciprocity between listening and nonrhetorical questioning (6a–6b). While we acknowledge that listening is also a construct at the individual level, the diagram in Figure 1 was kept as straightforward and simple as possible (implying Figure 1 refers to “listening” as a group-level construct). Similar to the argument that a group is made up of individuals, but rather represents more than the sum of its parts, we here merely want

to emphasize the importance of reciprocity and interdependence of questioning and listening (also as the basis for responding).

Moreover, the diagram in Figure 1 contains two additional overlapping feedback loops in which nonrhetorical questioning affects cognitive complexity, legitimacy of questioning, and psychological safety (3–7–9), which in turn may influence the intervention style of the academic supervisor (10b); the latter then affects whether the group task/problem is likely to be challenging, as such creating opportunities for students to experience doubt and raise nonrhetorical questions (11–5–1) and the extent to which students are motivated to become more aware of problem solving heuristics and inferencing steps, as the basis for deliberately using nonrhetorical questions (12–2).

All these feedback loops are self-reinforcing. As such, these feedback loops may operate in a virtuous (positively reinforcing) way—that is, a group becomes increasingly proficient in nonrhetorical questioning. However, these feedback loops can also operate in a vicious (negatively reinforcing) manner, which serves to explain why a newly formed group does not create a practice of reflective questioning, or why an initial culture of reflective questioning breaks down (e.g., to rhetorical questioning and other forms of nonreflective conversation). This also makes the processes in Figure 1 highly sensitive to initial conditions.

DISCUSSION

We began this article with the observation that management educators often run into defensive responses when trying to develop a group practice of reflective questioning. The conceptual argument in this article then served to develop a systemic understanding of how and why reflective questioning group practices (fail to) arise, summarized in the causal loop diagram in Figure 1. As such, this diagram serves to connect the widely dispersed body of literature on cognition, reflection, defensive behavior, psychological safety, questioning, and so forth.

As such, reflective questioning is a specific act and skill that students can learn to practice, both individually and in collaboration, but whether nonrhetorical questioning is actually practiced highly depends on group-level conditions. The multilevel model summarized in Figure 1 therefore incorporates both individual and group learning. In particular, the reciprocity between questioning and listening and the iterative links between psychological safety, nonrhetorical questioning, and its legitimacy explain how individual and group-level learning are connected. We thus provide an integrated model that ties together the cognitive and social dimensions of reflective questioning, as one of the most critical learning competences and behaviors needed in management education.

This model serves to prepare and train management students in self-criticism and the ability to uncover assumptions and beliefs that would otherwise remain taken for granted in their professional life (Antonacopoulou, 2010; Mintzberg & Gosling, 2002; Roglio & Light, 2009). Although most of the work done

in business schools focuses on providing and finding answers, a culture of reflective questioning may produce extraordinary outcomes and provide a true “ideal” future image for any management educator.

The model of key conditions and characteristics of reflective questioning developed in this article is preliminary in nature. Follow-up studies will need to empirically scrutinize the cause–effect relationships and the feedback loops proposed in this model.

IMPLICATIONS

The set of propositions developed in this article implies that reflective questioning can be learned and trained among management students, and that conditions positively affecting this type of questioning can be deliberately created. Existing training tools regarding the inference ladder (Argyris et al., 1995), responsible and constructive feedback (Roglio & Light, 2009), and passive and active listening (e.g., Burley-Allen, 1995) are widely used, but exclusively focus on one element of the model developed in this article. A systemic and more inclusive approach toward reflective questioning, as presented in the multilevel framework in Figure 1, has a number of implications. First, investing in a culture of reflective questioning is best done in an educational setting that truly challenges students—such as work on authentic business problems or final graduation projects. Second, prior to engaging in this type of projects, students should receive some training in problem-solving heuristics as well as in making inferences, in order to create an initial level of awareness and basic skills in these areas. Third, professors and other academics designing educational activities that draw on reflective questioning should be aware of the impact of their supervision style, particularly regarding the psychological safety experienced by students, but also as a role model in raising questions as well as addressing and solving problems. If students face high barriers in speaking up in educational settings and their academic supervisor does not act as a role model in reflective questioning, almost all efforts to build a culture of reflective questioning are pointless.

Moreover, team dialogue and group reflection practices tend to be more productive than learning alone, particularly in the face of ill-structured learning issues and problems (e.g., Jacobs & Coghlan, 2005; Kuhn & Lao, 1998; Kuhn et al., 2002; Mintzberg & Gosling, 2009; Roglio & Light, 2009). In this respect, engaging in critical reflection on a purely individual basis, for example, by writing a personal diary, does help make sense of experiences and provides ideas about how to deal with the more negative ones (cf. Learmonth, 2007), but this type of reflection can be substantially reinforced and deepened by engaging in group reflection in settings with low barriers to speaking up (cf., Thompson, 2000).

Most importantly, Figure 1 suggests that any attempt to build a culture of reflective questioning—at the level of groups,

programs, or even schools—can only be effective if we become “systems thinkers” (Senge, 1990). Of course, the causal loop diagram in this figure entails a rough simplification of educational reality, but does point at the virtuous or vicious nature of the dynamic patterns unfolding over time, making reflective questioning a huge challenge for any management educator.

In educational practice, reflection processes benefit from the interaction between individual and group level questioning. In order for the causal loops (identified in this article) to run in a virtuous manner, a culture of reflection needs to be nurtured. This means challenging students to think about things taken for granted, enabling them to speak up in a safe atmosphere in which participants learn to listen and are comfortable with expressing doubt, and providing them with tools for in-depth questioning. An example may be a business case full of paradoxes and uncertainties, in which student teams practice peer review while being coached by an academic supervisor. These student teams could, for instance, use a circular design, implying principles such as participant equivalence, shared responsibility for the supervision process, peer review, and decision making by consent (Romme, 2003). In turn, this culture of reflection would stimulate the individual process of reflective questioning, for instance, when “digesting” group discussions or working on individual tasks (van Seggelen-Damen & Romme, 2014). At both levels, the academic supervisor acts as a role model by using the ladder of inference and nonrhetorical questioning.

Although the causal loop diagram presented in this article refers to thesis supervision at the graduate level, it may not be restricted to graduate students. Undergraduate and executive MBA students can also be introduced to reflective questioning, in the context of work on (final) projects or earlier in their studies.

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