



The impact of virtual mirroring on customer satisfaction

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ABSTRACT

We investigate the impact of a novel method called “virtual mirroring” to promote employee self-reflection and impact customer satisfaction. The method is based on measuring communication patterns, through social network and semantic analysis, and mirroring them back to the individual. Our goal is to demonstrate that self-reflection can trigger a change in communication behaviors, which lead to increased customer satisfaction. We illustrate and test our approach analyzing e-mails of a large global services company by comparing changes in customer satisfaction associated with team leaders exposed to virtual mirroring (the experimental group). We find an increase in customer satisfaction in the experimental group and a decrease in the control group (team leaders not involved in the virtual mirroring process). With regard to the individual communication indicators, we find that customer satisfaction is higher when employees are more responsive, use a simpler language, are embedded in less centralized communication networks, and show more stable leadership patterns.

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1. Introduction

Just like the human body shivers when it has a fever, an organization frequently has a vague feeling that something is amiss, but is unable to pinpoint what is wrong. Similarly to the thermometer measuring the health of the body, we propose a novel approach to assess organizational health by calculating a series of communication metrics between individuals in the organization. Our goal is to demonstrate that offering individuals the opportunity to reflect on their own communication behaviors has the potential to change those behaviors and ultimately affect customer satisfaction.

Since the effects of feedback interventions—or mirroring sessions as we call them—on performance is far from being clearly explained (Hattie & Timperley, 2007; Kluger & DeNisi, 1996), our goal is to offer empirical evidence that there might be a positive association between increasing awareness of your own communication behaviors and an improvement of such behaviors. Just like mirror neurons put the self and the other back together and map the actions of the other into the self

(Iacoboni, 2009, p. 155), our virtual mirroring process is grounded on the idea that self-awareness requires socialization and continuous dialog on the impact that our words and behaviors have on others.

This paper describes the results of a two-year experiment that started in June 2012, where we assessed improvements in customer satisfaction using a virtual mirroring process that allows employees to learn about their own communication behavior tracked through e-mail analysis. In this project we involved leaders of 26 large accounts in monthly virtual mirroring sessions, where the communication characteristics of the teams working with clients were shared and discussed in plenary and individual sessions. To this purpose, we measured the structure of the communication network, looking at who is interacting with whom, the average complexity of the vocabulary used, as well as the responsiveness of employees to customers' e-mails. In this study, a social network structure is defined as the structure resulting from the regularities in the patterning of relationships among organizational members (Battistoni & Fronzetti Colladon, 2014; Wasserman & Faust, 1994).

2. Virtual mirroring as a way to promote self-awareness and create positive client-company interactions

Brainstorming or learning sessions represent a powerful methodology to educate members on their personal communication and learning styles. The process of looking at ourselves ‘in the mirror’ is important to

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create self-awareness, foster generative learning and shape team learning (Kluger & DeNisi, 1996). Recent studies illustrated the importance of conducting learning sessions by presenting results of social network analysis to organizational leaders with the potential to trigger a self-organizing feedback loop (Grippa, Gloor, Bucuvalas, & Palazzolo, 2012). These sessions allow members to reflect on their own communication styles, to look at their own areas of improvements, and to perceive themselves under a new perspective.

Mirroring and feedback sessions are commonly used in industrial and social psychology studies (Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988), and are widely adopted by consultants as a way to promote organizational change (Ramos, 2007). Virtual mirroring may encourage individuals to change behaviors in pursuit of targeted outcomes and might help identify opportunities for leaders to support innovation. For example, Gesell, Barkin, and Valente (2013) conducted a social network study where group leaders would receive a network map and specific data-driven recommendations on how to increase group connectivity. If the network was cohesive at session four, then the leaders would be instructed not to alter their teaching methods. Their sessions empirically guided program activities and resulted in increased group cohesion.

In virtual mirroring sessions, social network diagrams are presented and described to participants, along with individualized reports. These reports are widely used as an effective tool to help team members self-diagnose communication patterns and promote a process of behavioral change. After using feedback interventions with communities of practice, Cross and colleagues noted how *“Often one of the most effective interventions is simply to ask people to spend five minutes, either on their own or in groups of two or three, to identify what they ‘see’ in the map and the performance implications for the group”* (Cross et al., 2002, p. 11). Measuring individuals' communication patterns is the first step to create and nurture a climate of reciprocity with regard to information exchange and collective learning. Promoting awareness can be realized via a process of self-reflection, or mirroring, which draws attention to important aspects of organizational development and individual behavioral patterns. Self-awareness is defined as the individual ability to introspect and recognize oneself as an individual separate from the environment and other individuals (Ramachandran, 2012). Collective awareness requires team members to create and nurture a climate of reciprocity with regard to information exchange. In this context, interaction plays a key role in the creation and maintenance of collective awareness and in the development of a shared awareness about what they are engaged in (Weisband, 2002).

In a multi-experiment study, Wicklund and Duval (1971) used a mirror to induce self-awareness in the participants and found that performance was better for the groups that used a mirror during the study. In support of the Hawthorne effect (Gillespie, 1991), this stream of research seems to suggest that environmental factors—such as mirrors, an audience, being observed or recorded—have the potential to induce self-awareness and improve performance.

The ability to reflect on your sense of self is an important component of self-awareness. Since self-awareness might not be sufficient to trigger the desired change when an individual lacks fundamental skills, it is important to encourage readiness by offering the necessary tools to interpret the results of the mirroring sessions and set personal goals (Zimmerman, 2002).

Recently, Pentland and other researchers (Pentland, 2008, 2012; Gloor et al., 2007) studied how specific communication patterns account for differences of team performance and determined that communication exposure determines behavior and performance: *“People tend to learn more by copying others and by ‘trying things out’ versus working in isolation. Because of this, the more communication a person is exposed to, the more information he or she can harvest and put to use”* (Pentland, 2012, p. 3). Gloor (2005) developed a methodology called Knowledge Flow Optimization (KFO) that uses social network analysis to monitor communication among team members, comparing it with performance, and mirroring back results to participants. The KFO methodology, which comprises four main steps (Discover-Measure-Optimize-Mirror), has been applied

to track and support the growth of organizations from project start to completion (Gloor, 2005). Optimal communication structures vary depending on the institutional context and changing its form or content can lead to very different behaviors and results (Král & Králová, 2016). For example, for call center staff and nurses in a hospital setting, more hierarchical styles lead to better results (Olguin, Pentland, & Waber, 2007), while life sciences researchers deliver better results in decentralized collaboration networks (Grippa et al., 2012). In the mirroring process, the communication patterns of individuals and teams are shown to team members, together with information about communication patterns of the most successful individuals and teams (Grippa et al., 2012). This insight is based on the Hawthorne principle (Gillespie, 1991): telling a group of people that they are being monitored, and what the desirable communication patterns are, will get them to change their behavior towards the desired outcome.

Based on the empirical evidences and theoretical contributions described above, there is a high likelihood that a virtual mirroring process will lead to increased self-awareness and self-reflection on communication behaviors, which creates the condition for behavioral change. Since people tend to align their behavior with their standards when they become aware of any discrepancy (Duval & Wicklund, 1972), we conclude that virtual mirroring sessions have the potential to stimulate self-evaluation and foster behavioral change.

The dependent variable used in this study is customer satisfaction, which is widely considered an antecedent of customer loyalty, retention, word of mouth and firm profitability (Anderson, Fornell, & Lehmann, 1994; Bearden & Teel, 1983; Torres & Tribó, 2011; Wirtz & Lee, 2003). If a firm has a strong customer loyalty, this typically impacts the firm's economic return. Satisfied customers tend to be more willing to pay for the benefits they receive and are more likely to accept increases of prices (Anderson et al., 1994). Most of the variables commonly reported as having an effect on customer satisfaction involve employees' behaviors and include their level of friendliness, courtesy, competence, and support. This suggests that customer satisfaction is tightly related to employee satisfaction. Excellence in service requires building skills such as listening, empathy, empowerment, and a culture fostering innovation and creativity (Gremier & Gwinner, 2000). The key to acquiring and retaining today's customers is to deeply engage them in meaningful conversations, creating a connection with the company and nurturing a two-way dialog that creates active participation. The traditional methods to detect customer satisfaction are heavily relying on surveys, and most of the time they lack timeliness and details.

Fig. 1 presents the virtual mirroring process. The independent variables are the metrics of social network and semantic analysis, organized on three dimensions: degree of connectivity, use of language, and degree of interactivity (Gloor, 2006, p. 175; Zhang, Gloor, & Grippa, 2013). These indicators are the same used during the virtual mirroring sessions to illustrate organizational members their communication behaviors.

2.1. Study hypotheses

Our first hypothesis relies on the assumption that the feedback provided via virtual mirroring sessions represents a self-reflection opportunity that can create a change in the communication style.

H1. Exposing members of the organization to their own communication patterns—triggering their self-awareness—will increase customer satisfaction.

Our second hypothesis is based on the assumption that customer satisfaction increases when the communication style is more direct with customers. A direct commitment to individual customers has been recognized as a crucial factor for generating enhanced performance (Brodie, Hollebeek, Juric, & Ilic, 2011). As demonstrated by Webster and Sundaram (2009), an affiliative communication style will lead to greater customer satisfaction, especially when customers are in a relatively

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