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Connecting alone: Smartphone use, quality of social interactions and well-being

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ABSTRACT

This paper investigates the role played by the smartphone for the quality of social interactions and subjective well-being. We argue that, due to its intrusiveness, the smartphone reduces the quality of face-to-face interactions and, as a consequence, their positive impact on well-being. We test this hypothesis in a large and representative sample of Italian individuals. The results indicate that time spent with friends is worth less, in terms of life satisfaction, for individuals who use the smartphone. This finding is robust to the use of instrumental variables estimation to deal with possible endogeneity. We also show that, consistent with our hypothesis, the positive association between time spent with friends and satisfaction with friends is less strong for individuals who use the smartphone.

1. Introduction

The advent of the smartphone has changed substantially the way we access information, allocate time and interact with others. These changes have important behavioral and social implications. In this paper, we focus on one of these implications: the effect of smartphone use on the quality of face-to-face social interactions. It is widely documented that the quantity and quality of social interactions play a key role for subjective well-being (e.g., Ateca-Amestoy, Aguilar, & Moro-Egido, 2014; Bruni & Stanca, 2008; Becchetti, Trovato, & Londono Bedoya, 2011).[1] We argue that the intrusiveness of the smartphone, arising from its portability and connectivity power, reduces the quality of face-to-face social interactions and, as a consequence, their value in terms of satisfaction and well-being.

The smartphone subsumes within a single device a wide range of technologies. It can simultaneously satisfy the need to make a phone call, take a photo, pay a bill, listen to music, watch a video, use the Internet, chat through social networks and,

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[1] See also the studies that value interpersonal relations by using implicit prices obtained by estimating subjective well-being equations (Clark & Oswald, 2002; Powdthavee, 2008; Stanca, 2009) or hedonic prices (Colombo & Stanca, 2014).

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more generally, be entertained. All these functions have substantially improved and simplified life. However, the very fact that these activities can be carried out anywhere, has made this technology more intrusive than any other.[2] While it can be claimed that the smartphone has simplified the way people maintain their interpersonal relationships (Cho, 2015) and fulfill their duties (Derks, Duin, Tims, & Bakker, 2015; Kossek & Lautsch, 2012), anecdotal evidence and experimental studies show that people often neglect those with whom they are physically interacting with, while preferring to indulge themselves in their smartphone and to connect to "online others" (Turkle, 2012).[3]

In the presence of the smartphone, even when in silent mode, the need of being constantly connected is strongly perceived. This state of *absent presence* (Katz & Aakhus, 2002) diverts attention from face-to-face social interactions. The resulting process of social fragmentation (Gergen, 2003) implies withdrawal from immediate relationships (Miller-Ott, Kelly, & Duran, 2012; McDaniel & Coyne, 2016). As a consequence, despite the existence of several smarthphone activities that involve interactions with others, overall the smartphone can be expected to play a negative moderating role on the relationship between face-to-face social interactions and subjective well-being.

We test this hypothesis empirically, using a large and representative sample of Italian individuals between 2010 and 2014, focusing on time spent with friends as an indicator of social interactions. We consider alternative empirical specifications to assess the robustness of the results, and instrumental variables estimation to deal with the possible endogeneity of both time spent with friends and smartphone use. Our findings indicate that time spent with friends is worth less, in terms of life satisfaction, for individuals who use the smartphone. In addition, we show that the positive association between time spent with friends and *satisfaction with friends* is significantly less strong for individuals who use the smartphone. Overall, the results are consistent with the hypothesis that the smartphone negatively affects the quality of face-to-face social interactions.

The paper is structured as follows. Section 2 briefly discusses the related literature. Sections 3 and 4 describe the data and methods, respectively. Section 5 presents the results. Section 6 concludes.

2. Related literature

Since the seminal work by Putnam (2000), the literature has devoted much attention to the role played by information and communication technologies for social interactions and social capital, with a special focus on television and the Internet (see, e.g., Bruni & Stanca, 2008; Frey, Benesch, & Stutzer, 2007; Gentzkow, 2006; Gentzkow, Shapiro, & Sinkinson, 2011; Jensen & Oster, 2009; Kearney & Levine, 2015; La Ferrara, Chong, & Duryea, 2012; Misra, Cheng, Genevie, & Yuan, 2016; Olkean, 2009; Pénard, Poussing, & Suire, 2013; Rosenblat & Mobius, 2004; Wellman, Haase, Witte, & Hampton, 2001). While some studies find a positive effect of communication technologies on social relations (e.g. Antoci, Sabatini, & Sodini, 2012; Bauernschuster, Falck, & Woessmann, 2014), and particularly among the elders (Lelkes, 2013), for whom social isolation can be particularly relevant, other studies show that the more time people spend using information technologies for virtual interactions, the less time they devote to other social activities and, in particular, to face-to-face social interactions (e.g. Olkean, 2009; Mumford & Winner, 2010).

Different technologies may have different effects on face-to-face social interactions, depending on their degree of intrusiveness. Gergen (2002) proposes a useful distinction between *monological* communication technologies, such as radio, cinema and television, and *dialogic* communication technologies, such as telephone, online social networks and the Internet. While monological technologies imply a uni-directional communication flow, without allowing any interactions, and are often used collectively (e.g., going to the cinema with friends), dialogic communication technologies imply an interactive communication flow and require instantaneous, although not necessarily physical, connection of the users.

The literature indicates that many aspects of everyday life can be affected by the use of the smartphone (e.g., Misra & Stokols, 2012; Mumford & Winner, 2010). Several studies have shown that the smartphone can affect individuals' relational life (e.g. Miller-Ott et al., 2012; McDaniel & Coyne, 2016; Sprecher, Hampton, Heinzel, & Felmlee, 2016), and that excessive use of the smartphone can lead to addiction (e.g. Mok et al., 2014) and reduced capacity to enjoy leisure (Janković, Nikolić, Vukonjanski, & Terek, 2016; Lepp, Li, Barkley, & Salehi-Esfahani, 2015). On the other hand, recent studies have shown that the smartphone has enabled employees to stay connected to work while being away from the office, and has increased flexibility and workers' ability to reconcile their work and non-work activities (Derks et al., 2015). Furthermore, smartphone-based interventions have been shown to enhance the effects of policies on a wide range of outcomes, from the adoption of positive health behaviors (Peck, Stanton, & Reynolds, 2014) to economic development (Aker & Mbiti, 2010) and educational activities (Shin, Shin, Choo, & Beom, 2011).

The main argument for the presence of negative spillover effects of the smartphone on well-being is that the continuous flow of information and communication created by the presence of a smartphone may alter sensory perception. Individuals are constantly exposed to a sensory overload (Misra & Stokols, 2012) that, combined with multitasking possibilities, leads to reduced concentration (Pea et al., 2012), learning (Poldrack & Foerde, 2008) and memorization abilities, with a resulting

[2] Estimates suggest that people spend on average up to five hours per day on their smartphone (Andrews, Ellis, Shaw, & Piwek, 2015), with the device being the first thing people look at in the morning and the last thing they look at before going to sleep.

[3] According to Deloitte Global Mobile Consumer Survey (Donato, 2015), based on a representative sample of Italian consumers, 74% of the respondents use their mobile phone while spending time with family or friends, 42% while attending a business meeting, and 31% while driving; 70% check their phones within 30 min after waking up in the morning and 63% check their phones within 30 min of preparing to sleep.