



# Homophily and social influence among online casual game players



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## ABSTRACT

Homophily and social influence are the main explanations for why there are more ties among people who have similar socio-demographic or behavioral characteristics. Homophily refers to the phenomenon that people are more likely to make relational ties with others who are similar to themselves than those who are not, whereas social influence refers to the phenomenon that an individual's behavior is likely to become more similar to that of her friends over time. It is important to study both homophily and social influence processes of a social network because each process can lead to different structural characteristics for a social network; homophily can lead to separation among the members of a network, whereas social influence can lead to network-wide uniformity. In this study, we examine homophily and social influence processes among online casual game players. Specifically, we ask whether an online casual game player tends to be friends with other online casual game players who have similar game genre preferences and whether a player's genre preferences and gaming frequencies become more similar to those of her Kongregate friends over time. For this study, demographic attributes, game genre preferences, gaming frequencies, and relational ties for 2488 game players were collected for two time periods from Kongregate. The panel data were analyzed with RSiena, the R version of SIENA (Simulation Investigation for Empirical Network Analysis), a social network analysis program used for social network panel data. The results suggest that there might not be strong homophily and social influence processes operating among the game players in the sampled network.

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## 1. Introduction

A number of studies have found that relational ties are more likely to form between individuals who have similar socio-demographic and/or behavioral characteristics than between individuals who are dissimilar and that behaviors and attitudes of people who have relational ties tend to be similar (e.g., [Easley and Kleinberg, 2010](#); [Monge and Contractor, 2003](#); [Valente, 2010](#)). The 'birds of a feather flock together' tendency observed among people who drink alcohol and smoke, and similarity in smoking and alcohol use among friends are examples. That is, a smoker (or drinker) tends to be friends with other smokers (or drinkers) and an individual is more likely to smoke (or drink) if many of his friends also smoke (or drink) ([Alexander et al., 2001](#); [Christakis and Fowler, 2008](#); [Urberg et al., 1997](#)).

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These phenomena can be observed in many parts of our lives that are related to behavior or decision making in social contexts. Throughout our lives, we are more likely to be friends and interact with people who are similar to ourselves than with others who are dissimilar, and our behavior or attitude toward an issue is likely to be influenced by our friends so that we become similar to our friends (Monge and Contractor, 2003). These processes can lead to network autocorrelation, which is said to be present in a social network if there are more relational ties among a network's members who possess similar socio-demographic or behavioral characteristics than among members who do not (Steglich et al., 2006; Goodreau et al., 2009).

There are two underlying reasons for the presence of such network autocorrelation: homophily and social influence (Crandall et al., 2008). First, people are more likely to form relational ties with others who are similar to themselves, because they feel more comfortable interacting with people who are like themselves and feel more justified in their beliefs or opinions when being with others who are similar to themselves than when interacting or being with others who are dissimilar (Centola et al., 2007). Another distinct reason for autocorrelation in a social network is social influence among people who have relationships. That is, an individual's behavior is likely to become more similar to that of her friends over time, because people want to be like their friends to be liked and accepted by them (Friedkin, 1998; Monge and Contractor, 2003). For example, the phenomenon that smokers are more likely to become friends with others who also smoke can be explained by homophily, whereas a smoker with non-smoker friends becoming a non-smoker over time (the converse is also plausible) can be explained by social influence.

Studying whether a social network possesses the homophily characteristic or the social influence characteristic, or both of them is important. This is mainly because homophily and social influence processes can lead to very distinctive structural consequences of a social network (Crandall et al., 2008; Holme and Newman, 2006). Homophily can lead to separation among the members of a social network because members interact with other members who have similar characteristics, whereas social influence can lead to network-wide uniformity of a network (Crandall et al., 2008).

Furthermore, if how members of a network form relationships and influence each other is understood, then more tailored tools can be devised to manage the network in a way that can generate more benefits to its members and the network sponsor. For example, if we could understand the homophily and social influence processes among adolescent substance abusers, then we might be able to develop more effective tools to help reduce their substance abuse (Pearson et al., 2006; Steglich et al., 2010).

Although it is important to study both homophily and social influence processes in a social network, the number of studies that have attempted to do so is small. This scarcity is mainly due to the late development of statistical methods that can separate the effects of homophily and social influence and to the difficulty of collecting the panel data needed to do this (Steglich et al., 2010). Moreover, most of the studies that have attempted to separate homophily from social influence process have studied adolescents. For example, Pearson et al. (2006) studied homophily and social influence among adolescents with regard to substance abuse. Steglich et al. (2006) examined homophily and social influence processes in adolescents' friendship networks with respect to music tastes (i.e., techno, rock, and classical music). Friemel (2012) examined homophily and social influence in a social network composed of adolescents with regard to TV viewing behavior (i.e., frequency and genres viewed). The extent to which the findings of these studies of adolescents generalize to other demographic groups is not known. On the other hand, researchers have examined how an individual's behavior changes over time due to social influence from a social network perspective (e.g., Christakis and Fowler, 2007, 2008), but these studies did not specifically examine homophily process.

A couple of studies have attempted to separate homophily from social influence in interpersonal interactions on the Web. Crandall et al. (2008) studied homophily and social influence among Wikipedia editors. Aral et al. (2009) proposed a new statistical method to separate homophily from social influence and applied the method to a social network composed of a large number of individuals connected through instant messaging. They specifically examined the extent to which the diffusion of a mobile service application in the network could be explained by homophily and social influence.

On the other hand, many studies have examined either homophily or social influence in online settings, but not both. For example, Guitton (2012), and Lortie and Guitton (2011) studied how visual similarities among the avatars of an online group members are associated with the social dynamics of the group. Fiore and Donath (2005) examined homophily among users of online dating sites. Thelwall (2009) studied similarities among MySpace friends. Bakshy et al. (2009) and Bakshy et al. (2011) examined social influence processes from social network perspectives in online settings, but they did not look at the separate operations of homophily and social influence in a social network simultaneously.

The present study investigates homophily and social influence processes among online causal game players. Specifically, using panel data on the formation of relationships among game players and changes in their gaming behaviors over time collected from an online casual game aggregator, Kongregate, we examine whether a player tends to form connections<sup>1</sup> with other game players who have similar gaming characteristics to herself and whether a player's gaming behavior tends to become more similar to those of her Kongregate friends.<sup>2</sup> In this study, we focus on game genre preferences and gaming frequency as traits and behaviors that might be affected by homophily and social influence processes.

<sup>1</sup> A player can form a connection with another player on Kongregate by clicking the 'friend' button linked to the latter. Once a player connects to another player, then she has access to the information about that player.

<sup>2</sup> A player's Kongregate friend is referred to another Kongregate player to whom the player has a connection.

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