The Impact of Prevalent Behavioural Mimicry in Adolescents on Disease Prevention and Maintenance of Healthy Behavioural Activation

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ABSTRACT

The purpose of this paper is to explore the effect of popular imitative behaviors on adolescents' disease prevention and health maintenance behavior activation. We conducted a preliminary survey and PAM questionnaire in our experiment and found that popular imitative behaviors can increase the degree of disease prevention and health maintenance behavior activation among adolescents, and that web celebrities have the greatest impact on adolescent imitative behaviors.

Keywords: Prevent disease, Maintaining healthy, Activate, Adolescent, Behavioural mimicry, Healthcare app

INTRODUCTION

Online social media is a low-cost communication tool that can spread information and influence social opinion in real time (Gupta, Tyagi & Sharma, 2013), while bringing people closer together (Burke & Kraut, 2014). Smartphones and social media apps are an important means for adolescents to access information and socialise: 89% of 13–17-year-olds in the US own a smart phone, and 70% of them check their social media accounts multiple times a day for a variety of information (Hamilton, Nesi & Choukas-Bradley, 2020). Adolescents can attract followers by posting updates, and usually a higher rate of followers means they are more popular (Longobardi et al. 2020). Through social media, young people can find out about the daily lives, behaviour habit and preferences of web celebrities, stars or peers. Adolescence is a time of rapid social, psychological and physical change, Adolescents care about others' evaluation, and will seek prestige and status as well as desire to attract more attention (Dahl et al. 2018). Besides, the part of the social brain responsible for regulating imitation may still be maturing throughout adolescence (Cook & Bird, 2011), and adolescents are more likely to follow social trends and imitate the behaviour of peers or celebrities who are highly trafficked in order to gain popularity, status and attractiveness

(Raviv et al. 1996). Behavioural imitations that are widely learned and formed by groups in society are called epidemic behavioural imitations, which implies that such behavioural imitations have developed some influence in society and are not just one-to-one behavioural imitations. They may be spread through online media, or formed in young people's offline interactions with their friends. They are often initiated by people with some group influence, such as peers and celebrities who are more popular among their classmates. However, the behavioural imitation may lead to the formation of good social attitudes or to adolescents experimenting with certain risk-taking behaviours. This is partly due to the fact that adolescents believe at this stage that they are unique and will not be harmed by risks (Madarasová Gecková et al. 2005).

Since the vast majority of the world's adolescents (around 75%) live in low- and middle-income countries, where achieving positive health and well-being is often the most challenging. Preventing the occurrence of underlying health problems is therefore particularly important. Preventing potential health problems can improve the use of public health resources while increasing the well-being of citizens (Madarasová Gecková et al. 2005). Although many behavioural causes of health problems are difficult to avoid, most are preventable. Based on the unique characteristics of adolescents, with the right use and guidance, it is possible to intervene in adolescent behaviour and steer them in a positive direction.

OBJECTIVE

While the behavioural imitation of peers, elders and stars by adolescents is currently being explored, it is not clear how this imitation can help them to maintain health and prevent disease. Especially as adolescence is an important time for social cognition and brain development, it is worrying that poor behaviour can remain with adolescents for the rest of their lives, setting up the potential for future illnesses at an early age. Therefore, the aim of this study is to analyse how to use good social currents to promote the activation of healthy behaviours in adolescents. This includes: 1. the extent to which imitation behaviour activates healthy behaviours in adolescents; 2. measuring the impact of behavioural imitation on activating knowledge, skills and beliefs about health maintenance and disease prevention in adolescent groups.

METHOD

Research Design

A preparatory procedure was developed for collecting information on the groups with the greatest influence on adolescent behavioural mimicry, factors influencing adolescent health behaviours and the psychological needs of adolescents prior to conducting a study measuring adolescent disease prevention and maintenance of healthy behaviours. Firstly, we analysed the potential groups that could have an impact on adolescent health behaviour and identified 4 categories. Secondly, preliminary interviews were conducted with adolescents in this period, based on the characteristics of their adolescent

stage and the specificity of social media. This study provided 4 categories of needs for adolescent behavioural mimicry, and 3 categories of factors that influence adolescent health behaviour. As shown in Figure 1.

The first stage questionnaire was created in this study, and the second stage we used PAM questionnaire.

The first stage of the questionnaire consisted of two parts, identifying the groups that have the greatest influence on adolescent behavioural imitation and analysing the needs of adolescent behavioural imitation.

Between the first stage and the second stage, according to the groups determined in the first stage, establish a matching population sample;

After determining the groups that have the greatest impact on adolescent behavior, the second stage of the questionnaire is conducted to measure whether such groups can have an impact on their health behavior due to adolescent imitation, and what aspects (knowledge, skills, beliefs) of adolescent health behavior have been affected (Lu et al., 2021(1); (2)).

Stage 1 and Stage 2 questionnaires were completed by the same participants at intervals of one week (approximately), which allowed for interim analysis and the development of individual feedback. For practical reasons, the content of the Phase 1 questionnaire was subject to revision, but no further changes were made during the final data collection process.

Participant

The survey was conducted in China (Mainland and Hong Kong) between 2 December and 15 January 2022 through an online questionnaire on the Questionnaire Star platform (https://www.wjx.cn/). Participants were recruited through social media platforms such as WeChat, Weibo, Xiaohongshu and QQ. Participants should 1) be aged between 10–19 years old 2) have some social skills and interests. All participants agreed to answer the question based on their consent, honesty, and the instructions in the questionnaires. We distributed 500 questionnaires and eventually received 310 responses. The final sample consisted of 310 participants, 159 (51.3%) males and
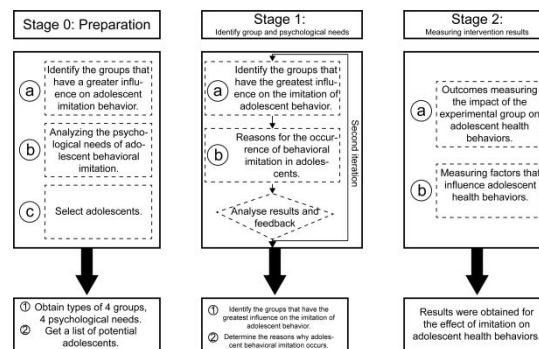

Figure 1: Study design, own design according to Jiang et al. (2021) and Fritschy and Spinler (2019).

Table 1. Socio-demographic data of participants who completed the initial survey (N1=310).

Characteristics	N1
Age	
Mean(SD)	15.9
Range	13-19
Sex,n(%)	
Male	159(51.3)
Female	151(48.7)
Educational level,n(%)	
Low	58(18.7)
Middle	97(37.3)
High	155(50)

151 (48.7%) females, whose average age was 16 ± 3 years. The final sample of 120 participants took part in a further questionnaire. The overall demographic characteristics of our sample are shown in Table 1.

Materials

The short questionnaire designed by the author is composed of two items, which are used to evaluate the groups that have a greater impact on adolescents' imitation behavior and to determine the reasons for adolescents' behavior imitation. The options of the questionnaire may be iterative in the actual operation process, but the options of the questionnaire that should be used for the final survey will not be changed. The other scale, PAM, is a measurement consisting of 13 items, which is used to evaluate patients' knowledge, skills and confidence in self-management. The scale is specified by Rasch analysis method and is an interval-level, single-dimensional scale similar to Guttman. The 13-item scale is a simplified version of the original 22-item scale, and its psychometric characteristics are similar to the original 22-item version. Participants were asked to indicate their level of agreement with the statements by selecting answers from four options (strongly disagree to strongly agree), with a theoretical range of 0 to 100 on the PAM, with higher activation scores associated with higher levels of activation (Nelufa et al. 2011; Jinnet et al. 2009; Hibbard et al. 2005).

Procedure

Through a self-designed questionnaire, we investigated the groups (such as celebrities, peers, parents) that 310 participants felt had an impact on their health behaviors and the reasons for their behavior imitation. After the questionnaire survey, 120 participants were randomly and evenly divided into three groups with 40 people in each group. The participants were surveyed with the PAM to measure the level of knowledge, skills and beliefs involved in the activation of maintaining health and preventing disease in the current youth group, with the aim of judging whether the behavioral imitation caused by these groups has affected the activation of healthy behaviors of

adolescents. The three groups of adolescents were then asked to be exposed frequently (daily) to the three groups that the designer had identified as having a strong influence on their behaviour (all of whom exhibited positive health behaviours), and then measured by the PAM after 1 month and 3 months, respectively, with the aim of investigating whether the behavioural mimicry due to these groups had an impact on their health behaviour after 1 month and 3 months (Jiang et al., 2020; Jiang et al., 2022).

Data Analysis

All statistical data analysis was performed on SPSS v24.0 and MS Excel for Windows. Based on the results of the PAM data, determine the extent to which imitation behaviour activates health behaviours in adolescents and the impact of behavioural imitation on the knowledge, skills and beliefs involved in the activation of adolescent groups towards maintaining health and preventing disease.

RESULTS

Identify the Groups That Have the Greatest Influence on Adolescents Imitation Behaviour

The questionnaire began by asking which groups caused the adolescents to imitate their behaviour. Table 2 shows the percentages of the highest scores in the survey. "Web celebrities" received the most votes (33.9%), followed by stars (28.4%), parents (21.6%) and people of a similar age such as classmates and friends (16.1%). This shows that the groups that have the most influence on young people's imitation behaviour are internet web celebrities, stars and parents.

Table 2. Social and behavioural imitation of participants who completed the initial survey (N1=310).

	N1,n(%)
Enjoys using social media and socialising online	
Yes	202(65.2)
No	108(34.8)
Prefer to socialise offline	
Yes	209(67.4)
No	101(32.6)
Groups that have a major influence on behavioural imitation	
Stars	88(28.4)
Web celebrities	105(33.9)
Parents	67(21.6)
Classmates, friends and others of similar age	50(16.1)
The main reasons why behavioural imitation occurs	
Access to social status	77(24.8)
Gain popularity and prestige	110(35.5)
Recognition of others' behaviour	81(26.1)
Reflection on the inadequacy of one's own behavior	42(13.6)

Determine the Reasons of Adolescent Behavior Imitation

In the second part of the questionnaire, the statistical results showed that there were three reasons most likely to cause imitative behaviour in adolescents, gaining popularity and prestige (110 votes, 35.5%), recognition of others' behaviour (81 votes, 26.1%) and gaining social status (77 votes, 24.8%), as shown in Table 2. Therefore, imitation of adolescent behaviour is most likely to occur through gaining popularity and prestige, recognition of each other's behaviour and gaining social status.

Evaluating Young People's Health Behavioural Activation

Based on the results of the first two parts of the study, we measured the extent to which imitation behaviour activates disease prevention and maintenance of healthy behaviours in adolescents using the PAM scale. The Figs. 2-4 shows that the extent to which adolescents had the beliefs, knowledge and skills to manage their condition, work with their providers, maintain their health and access appropriate and quality care was not high at baseline, with a score of 50.7, while the score for 'I know how to prevent further problems with my health condition' was the lowest score of 1.98. After we asked the three groups of participants to have frequent exposure to the three different populations for 1 month, the statistical results showed a significant increase in the activation of the adolescents' health behaviours, at which point their PAM score was 74.5. And over time, the scores at three months showed that the adolescents' activation levels (65.7) were significantly lower than those at 1 month, but still higher than their activation levels at baseline. And Web celebrities had the most significant impact on the activation of adolescent health behaviours. Meanwhile question 11, which previously had the lowest score, improved significantly after we applied the intervention for 1 and 3 months.

Therefore, the results show that adolescents are most likely to lead to behavioral imitation and improve the activation of healthy behaviors because of web celebrities, but whether it is web celebrities, stars or parents, their influence on adolescent imitation behavior will decrease with time.
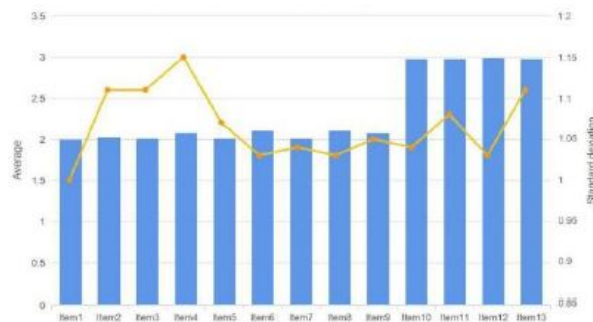

Figure 2: Health behaviour activation measures for participants (N2 = 120) at baseline (T1) using the PAM.
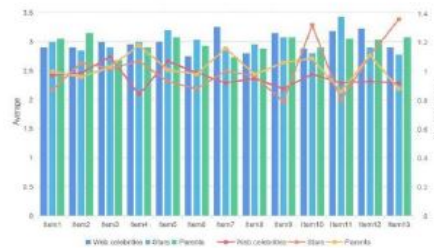
Figure 3: Health behaviour activation measures for participants (N2 = 120) at 1 month (T2) using the PAM.
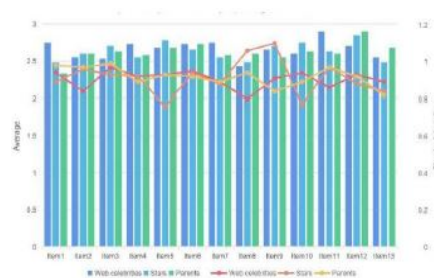

Figure 4: Health behaviour activation measures for participants (N2 = 120) at 3 month (T3) using the PAM.

Discussion

In this experiment, we tested the effect of imitation behaviors resulting from the influence of different groups on disease prevention and maintenance of healthy behaviors in adolescents.

Through our observations, we found that most adolescents are socially inclined (66.29%), which coincides with Peggy C. Giordano's (2003) survey that illustrates the increasing importance of relationships outside the family at the adolescent stage and their desire to gain popularity and prestige through imitative behavior (35.28%). With the popularity of electronic social media, adolescents are more likely to be influenced by people with greater influence, whether or not they can actually engage with them in real life, such as internet celebrities and stars, and this was confirmed in our experiments. Moreover, since web celebrities themselves are ordinary people who find their source of fame on social media (Khelkhal & OUAHMICHE, 2023; Jiang et al., 2022), they are closer to online users (adolescents), resulting in adolescents' behavior being more susceptible to their influence. The lower influence of star groups on adolescents compared to web celebrities may be due to the fact that they tend to appear in television and movies, and they are more like a special group independent of the general public, who mostly have distinctive characteristics such as looks, ability and money, and therefore are more likely to create a sense of distance (Amit et al. 2015; Jiang et al., 2023). However, if our sample of adolescents is a group of stargazers (i.e., they all have their own idols), the statistical results may behave differently (Kineta, Kimmy &

Caleb, 2011). Meanwhile, based on the occupational characteristics of the Internet celebrities and the popularity of social media, after being exposed to three groups of different nature, the Internet celebrity group showed the greatest activation impact on adolescents' disease prevention and maintenance of healthy behaviors after 1 month (74.8) and decreased the least after 3 months with a decline score of 8.4 over time, while the celebrity group and the parents' group had an impact on adolescents' healthy behaviors decreasing scores of 9.1 and 8.8, respectively.

In addition, we can see from Figure 1 that the data dispersion (0.002) and average score at baseline are very low (50.7), which is due to the low knowledge, skills and beliefs of most adolescents to prevent disease and maintain healthy behavior at baseline. After 1 month, the dispersion of the three data sets became larger and the mean score was significantly higher (74.47). Meanwhile, the web celebrity group has the largest dispersion (0.072) and the highest score, which is due to the fact that most of the adolescents identify with their behaviors to become fond of them, and most of them have distinct personal characteristics, such as being fitness practice web celebrities and health knowledge popularization web celebrities, so they have a more comprehensive and professional knowledge of a certain aspect. In our experiment, we selected groups of web celebrities who all had high health behavior performance, thus causing significant effects on adolescents' knowledge, skills, or beliefs, although they were not evenly affected. On the other hand, the parent group, despite being a major group influencing adolescent behavior at the time of the initial investigation, had the least impact on increasing adolescent health behavior activation in our three experimental groups. We suggest that this may be related to the different levels of knowledge about health in the parental group, as parents tend to have a basic knowledge of disease prevention and maintenance of health behavior knowledge, skills and beliefs (Ingeborg & Jostein, 1994), and therefore do not show an impact on a particular aspect of health behavior specific to adolescents. Meanwhile, although the influence of parents on adolescents was not as pronounced as in the web celebrity group, the parent group had a more sustained influence on adolescents because of their long-term offline contact with them (Shawn et al. 2016), and thus showed a lower level of data decline than the star group. After 3 months, the dispersion of the data scores decreased in all three groups and their dispersion was not significantly different, which may be due to the fact that the influence of all three groups on adolescent health behaviors decreased over time, while the greatest change in dispersion in the web celebrity group may be due to the fact that it is difficult for online celebrities with expertise in only one area to provide sustained appeal to adolescents (Alexandra, 2019).

LIMITATIONS

This review has some limitations. First, we could not guarantee that participants were completely free of health behaviors due to imitation before we imposed the intervention, and having already performed activation of adolescent health behaviors due to imitation would lead to some bias in the

experimental results, which may have caused them to score higher or lower after the intervention was applied. In addition, because the experiment was conducted in a normal life setting, we cannot guarantee that the adolescents were not exposed to other groups that may have influenced their behavior during the course of the intervention we imposed.

CONCLUSION

The results of the study suggest that imitating behaviors can increase the activation of disease prevention and maintenance of healthy behaviors in adolescents. If this imitation behavior based on the characteristics of adolescence is correctly utilized, it can promote the formation of good health behaviors and reduce the occurrence of potential diseases. Also, due to the popularity of online social media, we can leverage their power to better provide health behavior interventions and thus better health behavior activation for adolescents.

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