

The Reliance on Social Media and Its Correlation to People's Space-time Mappings

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ABSTRACT

The temporal perception and conception, including space-time mapping, may vary across different contexts, related to different cultural attitudes with time and the individual's temporal focus. Some research further reveals that the experience of pregnancy may influence women's space-time mappings. The previous series of studies have inferred that, besides the causation between the experience of pregnancy and space-time mappings, it is essential to discuss this relationship from other cultural aspects. Social media reliance has embedded in nowadays culture, and studies have shown that extensive focus on either social media or past-oriented thoughts experiences more severe negative moods. In the proposed study, we will test whether the reliance on social media is associated with people's space-time mappings, as previously shown in women's tendency to have more future-oriented thoughts during their pregnancy experience. The relationship between social media reliance and space-time mapping will be measured by a) the social media use questionnaire, b) the temporal focus questionnaire, and c) the Chinese version of the temporal diagram task adapted from de la Fuente et al.

Keywords: space-time mappings; social media reliance; temporal focus; cultural relativity; mental models, conceptual metaphor.

1. INTRODUCTION

According to Ad Hoc Cognition, people's interaction with contexts partially constructs their minds, including conceptualising time [1]. The temporal perception and conception may vary across different contexts, related to the individual's temporal focus and cultural attitudes with time [1]. For instance, People sometimes use the concepts of "front" and "back" to represent the temporal concepts of "future" and "past", which refers to space-time mappings. Firstly, based on the Temporal Focus Hypothesis [2], the temporal focus plays a causal role in determining the direction of space-time mapping in people's minds.

Secondly, either being in different life stages or having meaningful experiences may contribute to different cultural attitudes with time, influencing people's space-time mapping [3]. For instance, women with pregnancy experience have more future-oriented thought to adjust their maternal decisions based on expected fetal development and attempt a balance

between parenting and career [4]. Li and Cao have experimented with measuring the space-time mappings among pregnant and non-pregnant women. They have found that the pregnancy experience influences the space-time mapping in women's minds, and pregnant women tend to conceptualize the future in their front [4].

Likewise, like other types of essential experiences, social media may be associated with space-time mapping. Prior studies have shown that an average daily social media use in 2020 is 2.5 hours per day, which is a significant amount of time and even infer the likelihood that many people got social media reliance [5]. According to this data, we may notice that social media has become an indispensable part of modern culture, which is likely to impact people's temporal perception and conception. Meanwhile, studies have shown that people with interdependent self-construal tend to develop more frequent social media reliance [6], stressfully prompting them to spend plenty of time on social media each day to ensure they would not miss out on potential essential networking opportunities. In a psychiatric study with different temporal focus settings, the past-oriented

group generates the most severe depression symptoms [7]. This tendency has been clinically proven to contribute to depressive and anxious emotions. We may notice that extensive focus on social media or past-oriented thoughts experiences more severe negative moods.

Based on previous findings on how certain aspects of culture, such as future-oriented thoughts driven by pregnancy experience [4], influence space-time mapping, and current findings on the widespread of social media reliance embedded in nowadays culture, it is crucial for us to examine the relationship between social media reliance and space-time mapping. Indeed, it would help people better understand and plan their time on social media and avoid the adverse emotional and cognitive effects.

It is presumably that high social media use prevents people from being future-oriented because it focuses people’s attention more on the past and presents instead of focusing on the future. We hypothesized that, compared to people who spend less time on social media, people who spend more time on social media should be less future-oriented and thus be less likely to conceptualize the future in their front.

In order to test our hypothesis, the quasi-experiment will be conducted to examine the correlation between social media reliance and space-time mapping. Specifically, a) the social media use questionnaire, b) the temporal focus questionnaire [8] and c) the Chinese version of the temporal diagram task adapted from de la Fuente et al. [2,4] and d) debriefing questionnaire will be conducted in phase 1, phase 2, phase 3, and phase 4 correspondingly.

2.METHODS

2.1.Participants

We intend to recruit Chinese participants aged 18-22, males and females who are not in the gestation period, as we know that pregnancy can influence space-time mapping [4].

2.2.Measurements

The social media reliance will be measured by time spent on social media on the social media use questionnaire. The space-time mapping will be measured by the temporal focus questionnaire from Shipp et al. in stage 1 of the study [8]. We will use the translated version of the temporal diagram task from de la Fuente et al. [2], which is the same as Li & Cao [4] in stage 2 and stage 3. In stage 3, the TFS items will be measured by how frequently the respondent considered the period represented by the item, using a 7-point Likert scale that ranged from “1= never” to “7= constantly.” Each of the four items will produce high ratings for its intended dimensions and low ratings for the other two dimensions [8].

2.3.Procedures

2.3.1.Stage 1.

The participants will receive a questionnaire that asks the following questions (Figure 1):

English	Chinese
1. How much time on average do you spend on social media per day?	1. 您平均每天花多少时间在社交媒体上?
2. What is the main content of your social media usage?	2. 您使用社交媒体的主要内容是什么?
3. What is your intention of using social media?	3. 您使用社交媒体的意图是什么?

Figure 1 Social media usage questionnaire

For the first two questions, participants will be given their phones to check for the correct data under the researchers’ supervision, preventing them from leaking the content or searching up the purpose of the experiment.

2.3.2.Stage 2.

The participants will complete a Chinese version of the temporal diagram task adapted from de la Fuente et al. [2]. The Chinese version’s materials and methods will be identical to the English version [4], except that the task

will be translated into Chinese, and the cartoon character’s name will be changed to Li Hua.

Participants will be shown an overhead view of the cartoon character Li Hua, with a box in front of her and another box behind her (Figure 2). They will learn that Li Hua paid a visit to an animal-lover last week and pay another plant-lover next week. The participants will be instructed to fill in the box with A (for animal) for past events and P (for plant) for future events. The relationship between animal/plant and past/future events is asymmetric, as is the sequence of past/future events [4].



Figure 2 Temporal task diagram [2]

2.3.3. Stage 3.

The participants will respond to the temporal focus scale (TFS) to indicate their tendency of being past-oriented or future-oriented. The questionnaire is adapted from Shipp et al. [8], asking fundamental questions about their connection to past, present, and future events, and is translated to Chinese. There will be four questions corresponding to past, present, and future episodes, respectively. The order of questions will be mixed up, as shown in Figure 3.

English	Chinese
Past focus	
6. I replay memories of the past in my mind. 9. I reflect on what has happened in my life. 1. I think about things from my past. 11. I think back to my earlier days.	6.我在脑海中重温过去的记忆。 9 我反思生活中发生的事情。 1.我想起过去的事情。 11 我回想起我以前的日子。
Current focus	
4. I focus on what is currently happening in my life. 8. My mind is on the here and now. 10. I think about where I am today. 2. I live my life in the present.	4.我专注于我生活中正在发生的事情。 8.我的注意力集中在此时此地。 10 我会想我今天处于什么位置。 2.我活在当下。
Future focus	
3. I think about what my future has in store. 12. I think about times to come. 5. I focus on my future. 7. I imagine what tomorrow will bring for me.	3.我想到了我的未来。 12.我会想到即将到来的日子。 5.我专注于我的未来。 7.我想象明天会给我带来什么。

Figure 3 TFC questionnaire [8]

2.3.4. Stage 4.

After each participant completes the research procedures, they will receive a debriefing questionnaire

that asks them about the experimental purpose (as in Figure 4.) Once these questionnaire answers show participants became clued to the experiment's true purpose, their data will be excluded from our results to ensure the data accuracy.

English	Chinese
1. Do you know what the experiment intends to investigate? • Yes • no 2. What do you think is the purpose of this experiment: _____ _____	1. 您是否知道这个实验的目的? • 是 • 否 2. 您认为这个实验的目的是什么: _____ _____

Figure 4 Debriefing questionnaire. Please note that all of the questionnaires presented in English are only for reading purpose, the experiment is conducted entirely in Chinese

3.PREDICTIONS

For stage 1 and stage 2 of the experiment, we predict that, compared to participants who spend less time on social media, those who spend more time on social media will be more inclined to have past-in-front mapping

instead of future-in-front mapping, as they are more immersed in discussing or looking at past or present events. Therefore, we predict that a more significant portion of the participants that report an extended social media use time will not label the future-in-front box. Thus, when we graph time spent on social media against

the number of participants with future in front mapping (Figure 5), we predict that the line of best fit will have a downward sloping trend.

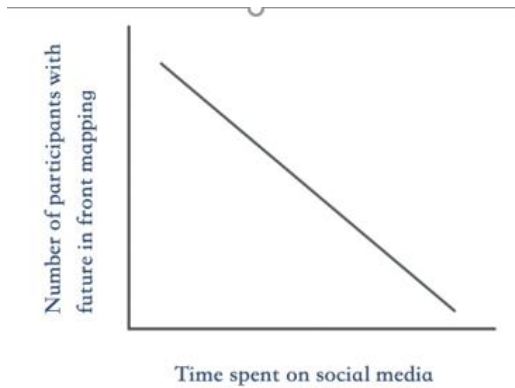


Figure 5 Stage 2 predicted trend (The relationship between Number of participants with future-in-front mapping and time spent on social media)

For stage 3 of the experiment, because we hypothesize that there is a correlation between social media use and being less future-oriented, we predicted that the group who spend more time on social media will have a lower mean score on the temporal focus scale in the four items related to future compared to the past items and present items than peoples who spend less time on social media. Because with only a past event and a future event in stage 2, stage 3 can help to indicate whether social media makes people more present or past-oriented. They can either score higher for the past items or future items, or the same, but we predict that they will score lower for the future items in all cases. Figure 6, 7, and 8 display the three possibilities. The participants who spend more time on social media will also have a lower mean score for the future items, compared to that of participants who spend less time on social media, but because the tendency of the latter is not our point of the investigation, the possibilities of their tendency will not vary in the following diagrams.

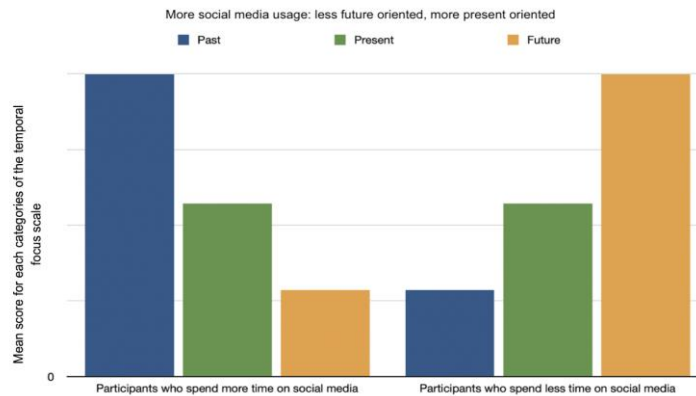


Figure 6 Less future-oriented, more present-oriented

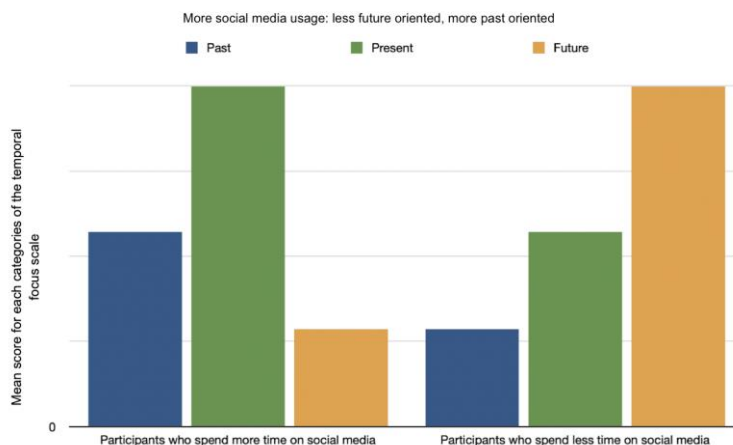


Figure 7 Less future-oriented, more past-oriented

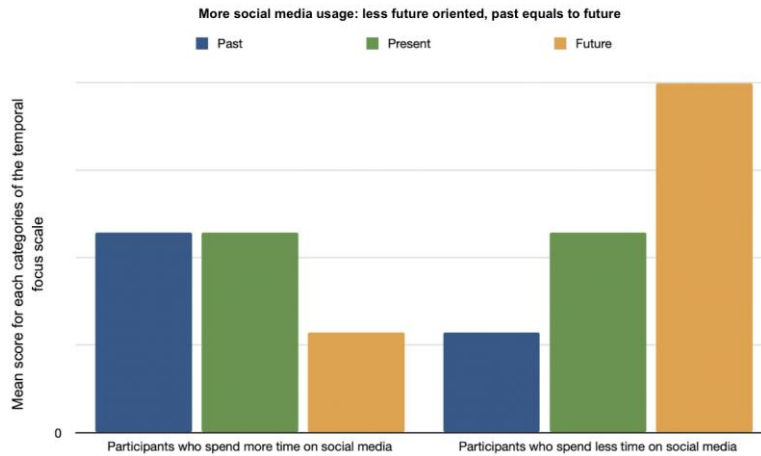


Figure 8 Less future-oriented, past equals to present oriented

However, it is also possible that there will be no correlation in the line of best fit in stage 2, and the diagrams may also have a different tendency in stage 3 due to various reasons because it is possible that spending more time on social media does not make people less future-oriented.

4.DISCUSSION

If the results are consistent with our predictions, we are expected to find the pattern: the more future-focused participants tend to spend less time on social media, and the opposite is true for those who are past/present-focused participants [9]. This can indicate some correspondence to the results from McKay et al. [7]— past-focused people usually spend more time on social media. Whereas if the results are showing the opposite pattern or approximate zero correlation between the temporal focus (predicted by space-time mappings) and time spent on social media, the research on this issue can be considered in terms of other factors such as the theme of the content and the dissimilarity between the exposure to online posts and daily usage of social media.

The study will only test the association between daily social media use and their space-time mappings without controlling the content participants watch on social media. As tested in [10], exposure to sports news or news on Covid-19 affects people’s temporal focus. Participants who read sports news showed a stronger tendency to be future-oriented, and the reverse is valid for the other group. This result suggests that our scholarship on daily use (time on social media) and space-time mappings might be brought by the content posted and user interactions such as like and comment. Users accustomed to checking historical facts and interpretations, compared with users who seek information on a release of an album, will have a significant difference regarding the content, and the user interaction might also differ. In a further study, we need to consider this via showing the posts with

specific topics. Expressly, combined with Experiment 5 in de la Fuente et al. [2], the topics of posts that participants are exposed to will be limited to predictions and reviews on the past and present while holding time constant. Other procedures will remain the same as the stages in our proposed study.

An alternative to the situation of lacking user interaction would be adding the feature of user-uploader interaction by pre-screening some comments to a post and categorizing them into three categories – past-oriented, present-oriented, and future-oriented. Participants across three groups will read the same post and subsequently see comments selected from three groups at random order. Before they continue to see comments that we will have selected, they will be checked if they understand the post by answering questions related to the post. The questionnaires and tasks measuring temporal focus can be the same for this alternative study. This whole process might also improve the validity of the study by measuring the response after seeing the comments regarding a fixed post. Topics and events covered in posts, whatever past, present, or future-focused the content is, might coincide with people’s diversified life experiences. However, the instant engagement with the author of a post can be precisely targeted at temporal focus, such as “looking forward to your next update” or “this post is worse than the last one”; these comments can be controlled to eliminate people’s value judgment of the posts according to their biases.

Based on the previous tool measuring temporal focus, two valid Temporal Focus Questionnaires can be selected for our research, one from Shipp et al. testing the current mental behaviour and temporal focus and the other from de la Fuente et al. testing opinions regarding specific global issues and temporal focus [2,8]. To improve our measurement validity, we will choose the former one since this experiment focuses on the interaction between egocentric factors (time on social media) and space-time mappings. This is because the topics in de la Fuente et

al.'s questionnaire could interfere with participants' habits on social media use [2]. A positive attitude towards technological advancement could have zero correlation with daily social media use as this category of views on economic and historical events might be fixed and show a weak relation between concurrent mental status.

5.CONCLUSION

A practical implication of this study is the potential to construct relations between the temporal focus (measured by the Questionnaire and temporal focus diagram) and diagnosis of reliance on social media. According to Jin et al. [11], the use of different platforms for social networking could trigger various extent of negative emotions, especially when comparing themselves with others and encountering ambiguous information from close friends. The consumer culture seems to be an element in most social media and when people are looking at new information, they are consuming and processing it in their minds. This, however, could contribute to habitual severe behaviour such as aimless browsing on social media. The research shows that highly future-focused people are often associated with self-control and planning beforehand [11]. Connecting this research with the results from Mckay et al. [7], possibilities exist in developing a new technique to detect reliance on social media and temporal focus provided that the pattern between temporal focus/space-time mappings and social media reliance will be examined in the future.

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