Research on Environmental Crowdfunding Projects Based on Narrative Persuasion Theory

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Abstract
Creating a compelling narrative is critical for crowdfunding projects to convince potential supporters to support it. This paper is trying to introduce narrative persuasion theory to the study of environmental crowdfunding projects. We discuss the mechanism of the narrative persuasion on attitude, and study the influence of the narrative on the support of crowdfunding projects through an experiment. Research results show that the narrative have a positive impact on the attitudes of potential supporters towards environmental crowdfunding projects by mechanisms of narrative understanding, attention focus, narrative presence and emotional engagement.

Keywords: Crowdfunding, Narrative persuasion, Narrative engagement, Attitude

1. Introduction
Narrative has long been regarded as an effective means of persuasion. Extensive research shows that narrative has important influence on readers no matter the narrative is present in which way or the content is real or fictional (Dal Cin 2004). Narrative can touch our emotions (Oatley & Gholamain 1997), influence what we believe in (Green & Brock 2000), teach us new behavior (Slater 2002), and shape our cultural identity (Jacobs 2002). In fact, the persuasiveness of the narrative is evident in our daily life and work. Parents recount fables or fairy tales to teach their children the right morals. The entrepreneurs tell a well-crafted story, build their identity and legitimacy, and gain the favor and support of investors (Lounsbury, M. & Glynn 2001).

Crowdfunding is becoming an increasingly active source of funding for projects over the past few years (Moritz 2016). This innovative crowdfunding practice has become the most widely used financing option for entrepreneurial projects based on the Internet platform, which raises funds and supports from a large and diverse group (Bruton et al. 2015). To seek support for crowdfunding projects, the sponsors need to communicate their visions, ideas and action plans to potential supporters. The entrepreneurial story is an effective way to convey visions and ideas to the audience (Martens 2007). For creators, conveying a compelling narrative is critical, they must provide accurate description of past events, expounds the future plan, and connect them together reliable (Abbott 2008). In many ways, the entrepreneur is a storyteller, who want to convince others to believe in the idea and get effective support. To a certain extent, it depends on how much of the influence of the narrative of the entrepreneur on the attitude of potential supporters (Phillip et al. 2017).

There are many scholars studying crowdfunding activities from the perspective of narrative. Manning and Thomas (2016) studied the structure of entrepreneurial narratives in crowdfunding activities. The article research how the project narratives of different kinds, history and potential future were framed and related to each other in order to attract investors based on comparative analysis of the crowdfunding activities from the Kickstarter platform. Frydrych et al. (2015) discussed how the formation of narrative and legitimacy influence the support from scattered and different types of investors for crowdfunding activities. Phillip et al. (2016) studied the publicity ability and credibility of crowdfunding narrative from the perspective of semantic analysis. Based on the essence of the narrative, this paper discusses the different dimensions of narrative persuasion and how the narrative influences the audience's attitude and then supports it from the perspective of narrative persuasion theory. This is an innovative and beneficial attempt to introduce the narrative persuasion theory into the study of crowdfunding. This paper not only reveals the mechanism of the effects of narrative on the attitude of the potential supporters in crowdfunding activities, but also explores a new perspective on the research of crowdfunding phenomenon.

2. Theoretical background and research hypotheses
2.1 Crowdfunding and Entrepreneurial narrative
Crowdfunding is a new type of marketing and financing pattern for different projects based on Internet platform (Mollick 2014). The common types of crowdfunding include donation-based, reward-based, lending-based and equity-based crowdfunding. Compared with traditional project financing methods, crowdfunding project financing has different characteristics. First, crowdfunding is widely used in innovation projects from different industries,
Narrative persuasion is achieved through narrative transportation. The narrative transportation theory was psychological process integrating attention, emotion and image (Green & Brock 2000). When people are proposed by Green in 2000. She defined narrative transportation as "immersing in" a story, which is a unique plays a particularly important role in the process of resource acquisition based on the Internet environment. The narratives can be produced and preserved, and individual investors can observe the progress of the project and the financing situation in real time. Not only that, but crowdfunding projects which are spread and share through the Internet can get more attention (Belleflamme 2014).

Research on crowdfunding has mostly understood it as a financing for start-up projects (Harrison 2013). Getting external resource support is a challenge for all entrepreneurial projects, including crowdfunding projects. Crowdfunding is seen as a strategic process: entrepreneurs set a specific goal for crowdfunding projects and take action to achieve them (Frydrych 2016). Unlike traditional venture capital investments based on strict financial calculations, the appeal of crowdfunding projects and investors' personal interests is more important in crowdfunding scenarios. Therefore, the perceived value of crowdfunding projects is constructed in the context of entrepreneurship rather than financial calculation based on investment environment (Downing 2015). Although the investment decisions may still be considered "rational", more accurate understanding is the inspiration of coherent narratives (Fisher 1984). Therefore, the entrepreneurial narrative plays an important role in crowdfunding activities. In recent years, the narrative which is helpful in sense-making and sense-giving for entrepreneurship has attracted more and more scholars' interest and research. Manning (2017) believes that narrative is an interesting tool for studying crowdfunding activities. First, crowdfunding is often initiated when the project is under way, and narrative is an important tool to describe past achievements and future plans when seeking resource support for entrepreneurial projects; Secondly, crowdfunding activities are aimed at diverse groups and the voice needs to be "robust and diversified" to meet the expectations of potential supporters. Fischer et al. (2014) argue that narrative plays a particularly important role in the process of resource acquisition based on the Internet environment. The vision, resource needs, and action plans of entrepreneurs are most easily understood in a narrative frame.

Narrative involves the process of sense-making and sense-giving, which helps to explain the decisions, events, activities and results of the past (Weick 2005). At the same time, the goal of the entrepreneur narrative is to be credible and understandable in the context of current conditions and achievements (Garud et al. 2014). By connecting the past with the future, the entrepreneurs inform their actions and mobilize stakeholder support. Crowdfunding activities are usually initiated at the beginning of a new project, after the initial development of ideas and the formation of a team, but still remain far from completion. So crowdfunding offers a rare snapshot of how entrepreneurs connect current projects with past development and potential future (Colombo 2013). In order to succeed in crowdfunding projects, it is extremely important for the sponsors to build a narrative of future actions and goals based on past experience and achievement (Navis & Glynn 2011). This narrative aims to describe how the past and future of the project relate to the current crowdfunding activities and persuade different audiences to understand and trust to gain resource support.

2.2 Narrative persuasion
Narrative persuasion is achieved through narrative transportation. The narrative transportation theory was proposed by Green in 2000. She defined narrative transportation as "immersing in" a story, which is a unique psychological process integrating attention, emotion and image (Green & Brock 2000). When people are transported into the story, the real world will become difficult to reach, their attention will be completely focused on the story and the scenario described in the story produces almost real psychological representation. And with the development of the story, the readers experience a strong emotional reaction, as if they were completely out of the real world and lost in the world of stories. When people return to reality from the story world, attitudes, beliefs and even self-concepts have been changed, which are consistent with the story (Dunlop 2010). At present, narrative transportation has been widely used in real life and research, and it is widely used in fields such as advertising persuasion, news media, health promotion and entertainment education (Escalas 2004; Shen et al. 2014; Murphy et al. 2013).

One of the power of the story is that it can evoke emotions of the audience (Durkin 2008), emotion is the core of the story (Oatley 2002). Research shows that attitudes can be based on emotion, cognition, or both, and emotional responses are particularly powerful in attitude. Narrative persuasion may be particularly effective in forming or changing attitudes based on feelings or emotions and perceptions. In addition, researchers argue that people are more likely to be persuaded when their emotional state matches the narrative emotional framework (De Steno et al. 2004). Transportation can keep the reader's emotions in line with the emotional tone of the narrative.
The story can arouse the vivid psychological appearance, which has a strong sense of reality, even more vivid, more real than the actual scene. The person who is transported into the world of the story will have an immersive feeling, as if experiencing the events in the story. This near-real sense of presence is powerful in changing attitudes. For example, when reading a heartwarming story of helping others, the reader will imagine himself as the hero of the story, experiencing the behavior of the protagonist and feeling the protagonist's psychological activities. As the hero helps others and gets pleasure, the reader also feels the pleasure and reinforces the attitude of helping others.

Busselle and Bilandzic (2009) developed narrative engagement theory based on narrative transportation. The narrative engagement theory holds that the narrative influences readers’ attitudes from the four dimensions of narrative understanding, attention focus, narrative presence and emotional engagement. Narrative understanding refers to the reader's understanding of the story. Attention focuses means whether the reader is focused on the reading of narrative. Narrative presence refers to a state in which the reader moves away from the real world and into the world of the story. Emotional involvement is about the relationship between the reader and the role of the story. In addition, they developed a measurement scale of narrative engagement which is very mature and stable (Busselle & Bilandzic 2008).

To sum up, this paper proposes the following research hypothesis:

H1: The narrative engagement of potential supporters has a positive effect on the attitude of supporters towards crowdfunding project;

H2: The narrative understanding of potential supporters has a positive effect on the attitude of supporters towards crowdfunding project;

H3: The attention focus of the potential supporters has a positive effect on the attitude of supporters towards crowdfunding project;

H4: The narrative presence of the potential supporters has a positive effect on the attitude of supporters towards crowdfunding project;

H5: The emotional engagement of the potential supporters has a positive effect on the attitude of supporters towards crowdfunding project.

3. Research design and data analysis

3.1 Research design

This paper selects 20 commonweal crowdfunding projects from Tencent crowdfunding platform, which focuses on environmental protection. The main reason why commonweal crowdfunding projects are chosen is because they require the potential investors to give support without any material or financial rewards. The decision-making of potential investors is based on the past achievements and future plan of the project itself and the extent of their interest and input attracted by the project narratives, rather than economic test based on financial returns. The narrative is more important, especially for environmental crowdfunding projects. The encoders are outstanding students from the school of management in USTC. After a full training session on the research background and specific knowledge, 9 coders who met the requirements were asked to read the 20 commonweal crowdfunding project narratives. The experiment was conducted in a quiet enclosed classroom. The encoders read each narrative and fill in the narrative engagement scale and attitude scale. A total of 180 valid data samples were collected.

3.2 Reliability and Validity Analysis

3.2.1 Narrative understanding

Using the data collected, the 3 items were subjected to an exploratory factor analysis (EFA) utilizing principal axis factoring and oblimin rotation, with the scree test criterion used to confirm the items relate to just one factor: A single-factor model was declared and estimated in SPSS Modeler Professional. All 3 items estimated loaded well, with no issues related to low factor loadings (<.50) existing. The estimated factor solution accounted for approximately 88.975% of the total variance in the data and exhibited a KMO measure of .755. Table 1 is the complete list of the items resulting from this EFA. From the result, each of the factor loading of the three items is above 0.7, indicating that the scale has good validity. Cronbach's alpha value is 0.938, indicating that these items achieved an adequate reliability.
### TABLE1. Exploratory Factor Analysis for Narrative understanding

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Factor Loading</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At points, I had a hard time making sense of what was going on in the program.</td>
<td>0.931</td>
<td>0.938</td>
</tr>
<tr>
<td>2. My understanding of the characters is unclear.</td>
<td>0.958</td>
<td></td>
</tr>
<tr>
<td>3. I had a hard time recognizing the thread of the story.</td>
<td>0.940</td>
<td></td>
</tr>
</tbody>
</table>

KMO = 0.755  
Bartlett's Test of Sphericity Approx. Chi-Square = 475.436  
P = 0.000

3.2.2 Attention focus

Using the data collected, the 3 items were subjected to an exploratory factor analysis (EFA) utilizing principal axis factoring and oblimin rotation, with the scree test criterion used to confirm the items relate to just one factor: A single-factor model was declared and estimated in SPSS Modeler Professional. All 3 items estimated loaded well, with no issues related to low factor loadings (<.50) existing. The estimated factor solution accounted for approximately 85.732% of the total variance in the data and exhibited a KMO measure of .753. Table 2 is the complete list of the items resulting from this EFA. From the result, each of the factor loading of the three items is above 0.7, indicating that the scale has good validity. Cronbach's alpha value is 0.916, indicating that these items achieved an adequate reliability.

### TABLE2. Exploratory Factor Analysis for Attention focus

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Factor Loading</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I found my mind wandering while reading the narrative</td>
<td>0.936</td>
<td>0.916</td>
</tr>
<tr>
<td>2. I found myself thinking about other things while reading</td>
<td>0.933</td>
<td></td>
</tr>
<tr>
<td>3. I had a hard time keeping my mind on the narrative</td>
<td>0.909</td>
<td></td>
</tr>
</tbody>
</table>

KMO = 0.753  
Bartlett's Test of Sphericity Approx. Chi-Square = 396.057  
P = 0.000

3.2.3 Narrative presence

Using the data collected, the 3 items were subjected to an exploratory factor analysis (EFA) utilizing principal axis factoring and oblimin rotation, with the scree test criterion used to confirm the items relate to just one factor: A single-factor model was declared and estimated in SPSS Modeler Professional. The loading coefficient of the second item was 0.132, so it was deleted from the scale. The last 2 items estimated loaded well, with no issues related to low factor loadings (<.50) existing. The estimated factor solution accounted for approximately 87.915% of the total variance in the data and exhibited a KMO measure of .500. Table 3 is the complete list of the items resulting from this EFA. From the result, each of the factor loading of the two items is above 0.7, indicating that the scale has good validity. Cronbach's alpha value is 0.916, indicating that these items achieved an adequate reliability.

### TABLE3. Exploratory Factor Analysis for Narrative presence

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Factor Loading</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. During the reading, my body was in the room, but my mind was inside the world created by the story</td>
<td>0.938</td>
<td>0.862</td>
</tr>
<tr>
<td>2. At times during the reading, the story world was closer to me than the real world</td>
<td>0.938</td>
<td></td>
</tr>
</tbody>
</table>

KMO = 0.500  
Bartlett's Test of Sphericity Approx. Chi-Square = 151.888  
P = 0.000

3.2.4 Emotional engagement

Using the data collected, the 2 items were subjected to an exploratory factor analysis (EFA) utilizing principal axis factoring and oblimin rotation, with the scree test criterion used to confirm the items relate to just one factor: A single-factor model was declared and estimated in SPSS Modeler Professional. All 2 items estimated loaded well, with no issues related to low factor loadings (<.50) existing. The estimated factor solution accounted for approximately 92.635% of the total variance in the data and exhibited a KMO measure of .500. Table 4 is the complete list of the items resulting from this EFA. From the result, each of the factor loading of the two items is above 0.7, indicating that the scale has good validity. Cronbach's alpha value is 0.919, indicating that these items achieved an adequate reliability.
TABLE 4: Exploratory Factor Analysis for Emotional engagement

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Factor Loading</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The story affected me emotionally</td>
<td>0.962</td>
<td>0.919</td>
</tr>
<tr>
<td>2. During the reading, when a main character succeeded, I felt happy, and when they suffered in some way, I felt sad.</td>
<td>0.962</td>
<td></td>
</tr>
</tbody>
</table>

KMO = 0.500
Bartlett's Test of Sphericity Approx. Chi-Square = 230.510
P = 0.000

3.2.5 Narrative engagement

Then, the four dimensions of narrative understanding, attention focus, narrative presence and emotional engagement were subjected to an exploratory factor analysis (EFA) utilizing principal axis factoring and oblimin rotation, with the scree test criterion used to confirm the items relate to just one factor: A single-factor model was declared and estimated in SPSS Modeler Professional. All 4 dimensions estimated loaded well, with no issues related to low factor loadings (<.50) existing. The estimated factor solution accounted for approximately 73.796% of the total variance in the data and exhibited a KMO measure of .784. Table 5 is the complete list of the items resulting from this EFA. From the result, each of the factor loading of the two items is above 0.7, indicating that the scale has good validity. Cronbach's alpha value is 0.881, indicating that these items achieved an adequate reliability.

TABLE 5: Exploratory Factor Analysis for Narrative engagement

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Factor Loading</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. narrative understanding</td>
<td>0.863</td>
<td></td>
</tr>
<tr>
<td>2. attention focus</td>
<td>0.841</td>
<td>0.881</td>
</tr>
<tr>
<td>3. narrative presence</td>
<td>0.897</td>
<td></td>
</tr>
<tr>
<td>4. emotional engagement</td>
<td>0.833</td>
<td></td>
</tr>
</tbody>
</table>

KMO = 0.784
Bartlett's Test of Sphericity Approx. Chi-Square = 403.093
P = 0.000

3.2.6 Attitude

Using the data collected, the 2 items of attitude scale were subjected to an exploratory factor analysis (EFA) utilizing principal axis factoring and oblimin rotation, with the scree test criterion used to confirm the items relate to just one factor: A single-factor model was declared and estimated in SPSS Modeler Professional. All 2 items estimated loaded well, with no issues related to low factor loadings (<.50) existing. The estimated factor solution accounted for approximately 91.505% of the total variance in the data and exhibited a KMO measure of .500. Table 6 is the complete list of the items resulting from this EFA. From the result, each of the factor loading of the two items is above 0.7, indicating that the scale has good validity. Cronbach's alpha value is 0.907, indicating that these items achieved an adequate reliability.

TABLE 6: Exploratory Factor Analysis for Attitude

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Factor Loading</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think this crowdfunding project will be successful</td>
<td>0.957</td>
<td>0.907</td>
</tr>
<tr>
<td>2. I would like to support this crowdfunding project</td>
<td>0.957</td>
<td></td>
</tr>
</tbody>
</table>

KMO = 0.500
Bartlett's Test of Sphericity Approx. Chi-Square = 207.342
P = 0.000

3.3 Descriptive statistics and correlation analysis

Table 7 shows the analysis results of descriptive statistics and correlation matrix: the narrative engagement is positively correlated with attitude (r = 0.516, p < 0.01); the narrative understanding is positively correlated with attitude (r = 0.553, p < 0.01); the attention focus is positively correlated with attitude (r = 0.555, p < 0.01); the narrative presence is positively correlated with attitude (r = 0.643, p < 0.01); the emotional engagement is positively correlated with attitude (r = 0.761, p < 0.01). The above results show that the narrative engagement of potential supporters has a positive effect on the attitude of supporters towards crowdfunding project; and the attitude of potential supporters are positively influenced by the four dimensions of narrative understanding, attention focus, narrative presence and emotional engagement.
4. Conclusion and discussion

For the sponsor of a crowdfunding project, creating a compelling project narrative is critical. In particular, the narrative is critical for environmental crowdfunding projects, which has no material or financial rewards for potential supporters. The narrative can help entrepreneurs elaborate on the project's past achievements, future plans, and connect them to the current crowdfunding activities to attract the attention and support of potential investors. In this paper, the theory of narrative persuasion is introduced into the research of crowdfunding projects. Research results show that the narrative have a positive impact on the attitudes of potential supporters towards environmental crowdfunding projects by mechanisms of narrative understanding, attention focus, narrative presence and emotional engagement. This paper provides a new perspective on the research of crowdfunding projects, and also makes some contributions to the research and application of narrative persuasion theory.

Future research can continue to understand and study crowdfunding projects from a narrative perspective. For non-public crowdfunding projects, in addition to financial considerations, how the narratives influence the attitudes of potential supporters. What are the differences between different narrative styles and language characteristics between successful and unsuccessful crowdfunding projects. In addition, what is the role of the individual differences of potential supporters played in the persuasive effect of narrative. These questions are the direction of further research in the future.

References

| TABLE 7. Descriptive Statistics and Correlation Matrix |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                  | 1         | 2         | 3         | 4         | 5         | 6         |
| 1. narrative engagement | 1         |           |           |           |           |           |
| 2. narrative understanding | 0.863**   | 1         |           |           |           |           |
| 3. attention focus | 0.841**   | 0.713**   | 1         |           |           |           |
| 4. narrative presence | 0.897**   | 0.672**   | 0.646**   | 1         |           |           |
| 5. emotional engagement | 0.833**   | 0.577**   | 0.6538**  | 0.753**   | 1         |           |
| 6. attitude | 0.730**   | 0.553**   | 0.555**   | 0.643**   | 0.761**   | 1         |
| M                | 3.87338   | 4.09444   | 3.924074  | 3.627778  | 3.847222  | 3.669444  |
| SD               | 0.809078  | 0.916579  | 0.893211  | 1.000169  | 0.954919  | 1.027473  |

**:Correlation is significant at the 0.01 level (2-tailed).


