THE USE OF WRITING STRATEGIES TO INCREASE ORGAN DONATION INTENTIONS

A Thesis

presented to the Faculty of the Graduate School

at the University of Missouri-Columbia

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

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by

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DECEMBER 2020

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THE USE OF WRITING STRATEGIES TO INCREASE ORGAN DONATION INTENTIONS

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ACKNOWLEDGEMENTS

I would like to thank Professor Shaffer, Professor Booker, Professor Merkle, and Horstman for serving as my committee members and helping me to make a better paper. Also, I would like to thank all my lab-mates for their wonderful suggestions and time spending on collecting data. Finally, I would love to thank my mentor Professor Shaffer again for all her comments, suggestions, editing, time, and love.

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Abstract

Organ shortage has been a big problem for a relatively long time. A variety of interventions from the policy level to the individual level have been used to expand the organ donation pool. The goal of this project is to examine the influence of the content and structure of narrative writing on attitudes and behavioral intentions towards organ donation. In Study 1, participants were randomly assigned into one of the three writing groups. Two of the groups were asked to create a character and then write a narrative either related (Narrative Group-NG) or unrelated (Control Group-CG) to organ donation. The other group was asked to answer some open-ended questions related to organ donation (Fragmented Group-FG). The results indicated that the intention change toward organ donation for NG was significantly different from the other two groups in two of the five items in the scale, which suggested that both topic and format can somewhat influence the organ donation intention. When comparing the writing content, the NG differed from the FG in both linguistic structure and psychological processes while the NG and CG differed mainly in their use of psychological processes and pronouns. In Study 2, a more vivid character creating procedure was developed to further shape the personality of the character. Participants were randomly assigned into one of the four writing groups. Two of the groups were asked to create a character either similar (Similar Vivid Narrative Group-SVN) or dissimilar (Dissimilar Vivid Narrative Group-DVN) to the writer and then write a short story to shape the personality of the character. They were then asked to write another short story where this character was in need of kidney transplant. The other two groups were asked to write about the room they were in first. And then, they were asked to write a short story of a character, either similar (Similar

Narrative Control Group-SNC) to dissimilar (Dissimilar Narrative Control Group-DNC) to them, was in need of kidney transplant. Participant who were more transported into the narrative story they wrote and were more similar to the character they wrote tended to have more positive change of organ donation intention. Analysis of the narrative writing content revealed that the use of social process words and less gender reference words were associated with a greater increase in organ donation intention.

The Use of Writing Strategies to Increase Organ Donation Intentions

Organ shortage has been a significant problem for a relatively long time. During the past decade, the number of patients who are in need of an organ transplant due to vital organ failure has increased rapidly ("Organ Donation Statistics," 2019), and thousands of people on waiting list die each year because they are unable to get a transplant. In April 2018, there were more than 114,000 people on the national transplant waiting list; yet in 2017, there were only 34,770 transplants performed in the United States. Currently, demand for organ transplant greatly exceeds the supply, and unless policies to encourage organ donation are developed, this imbalance is likely to continue into the foreseeable future.

Current data shows that, although the majority of American adults (around 95%) claim that they support organ donation, only 54% of them have signed up to become a donor ("Organ Donation Statistics," 2019). Much research has been devoted to understanding and addressing this documented discrepancy; however, the gap between attitudes and behavior persists in organ donation. The goal of this project is to test whether different writing strategies can influence behavioral intentions toward organ donation.

Theoretical Models

Several theoretical models have been applied to the study of organ donation intentions. A commonly applied theory on this topic is the Theory of Reasoned Action (TRA). TRA suggests that intention predicts behavior, and intention is influenced by attitude towards the behavior and some normative perception (Ajzen, 1991; Ajzen & Fishbein, 1977; Fishbein & Ajzen, 1975). Additionally, Vested Interest Theory (VIT) suggests that vested interest—the hedonic related attitude—is also a moderator between attitude and behavior. When people believe their personal interest will be influenced by the behavior suggested by the attitude, they tend to act (Crano, 1983). Therefore, people tend to have higher consistency between their attitudes and behavior when they feel the topic is very important to them (Sivacek & Crano, 1982). Although a meta-analysis suggested that factors such as personal background, beliefs, altruism, knowledge, emphasis etc. can affect organ donation attitude and intention, some researchers have also found that less rational beliefs also help to explain organ donation intentions and behaviors (Nijkamp, Hollestelle, Zeegers, van den Borne, & Reubsaet, 2008; O'carroll, Foster, McGeechan, Sandford, & Ferguson, 2011). The Organ Donor Model (ODM) is a new model developed based upon the TRA by adding some “irrational” factors. Irrational factors are those that cannot be explained by reason or one’s life experience. They act more like subconscious beliefs one can only feel and believe but hard to convince others (Sanner, 2001). In the ODM, irrational factors related to organ donation intention have been divided into specific types including “ick factors” and “jinx factors”. The “ick factors” indicate a feeling of disgust about the idea of using others’ personal body parts, even their organs. The “jinx factors” measure the feeling of bad luck about signing an

organ donation card. Moreover, people in some religions cannot accept the idea that their body will be cut and some part of them will be taken away even after death. They might believe that a separated body will lead to a bad posthumous life or next life. Another belief that can be irrational is that hospitals and doctors are untrustworthy (O'carroll et al., 2011). Notably some researchers have also found that "ick" factors and "jinx" factors can explain more variance than cognitive factors do to distinguish donor and nondonor (O'carroll et al., 2011).

Personality, Racial/Ethnic, and Religious Characteristics

Other personality, racial/ethnic, and religious characteristics also are associated with a person's willingness to become an organ donor. People who are more benevolent, altruistic, report less fear of death, and score lower on measures of authoritarianism are more likely to register to be a donor (Besser, Amir, & Barkan, 2004; Ryckman, van den Borne, Thornton, & Gold, 2005). In addition, White Americans show much stronger social responsibility than Asian Americans and thus are more likely to become organ donor (Park, Shin, & Yun, 2009). Religions and traditions about death and the integrity of body for Asian and Middle East countries make them more conservative about organ donation and less likely to donate compare to European countries (Shaheen, 2009; Woo, 1992).

Possible Interventions

During the past several decades, a variety of interventions designed to increase organ donation rates have been tested. *Presumed consent legislation*—where people are automatically considered to be a donor unless they have stated they prefer not to be—was

expected to lead to a higher donation rate compare to informed consent—where people have to document their interest in becoming a donor—because of a lower cost of action (Abadie & Gay, 2006; Ugur, 2015; Verheijde, Rady, McGregor, & Friederich-Murray, 2009). However, in real-world examples such as Singapore and California, such legislation has not improved donation rates (Kessler & Roth, 2014; Kwek, Lew, Tan, & Kong, 2009).

Additionally, researchers who study the effect of media found that positive mass media, such as Grey's Anatomy, can reduce viewers' misunderstanding of the medical system and other health-related myths (Quick, 2009). However, 90% of the media coverage about organ donation has been found to be misleading; thus, audiences of those programs are less like to be motivated to become an organ donor (Harrison, Morgan, & Chewning, 2008; Morgan, Harrison, Chewning, Davis, & DiCorcia, 2007; Morgan et al., 2005; Quick, Morgan, LaVoie, & Bosch, 2014).

As another possibility, financial rewards have been suggested for promoting donation registration rate. However, research indicates the approach may not be effective due to negative feelings that develop associated with "purchasing" organs (Prottas, 1992). For example, people who agree to be donors often report feeling regret after receiving payment and frequently change their decision as a result (Mayrhofer-Reinhartshuber, Fitzgerald, Benetka, & Fitzgerald, 2006).

Other approaches involve increasing communication with family. This is important because organ procurement permission is needed from next-of-kin and only around half of people who want to donate have expressed this to their families (Guadagnoli et al., 1999). However, for individuals who participated in 23

communication campaigns aimed at helping to increase knowledge and deal with confusion, anxiety, and fear, registration rates were only 5% higher than those control groups (Feeley & Moon, 2009). Efforts also have been made to provide a clear concept of "brain death" to families and to pick a right time to request the donation; however, efforts have not been successful in part due to families' time differences in grieving (DeJong, Franz, Wolfe, & Howard, 1998; Gortmaker et al., 1998; Kometsi & Louw, 1999; Rosel, Frutos, Blanca, & Ruiz, 1999; von Pohle, 1996). Meanwhile, giving a deadline to nudge people into making a decision can be very effective given that people are very likely to postpone a decision making if no clear deadline is given (Birkimer et al., 1994). Lastly, some research suggests that how the message is delivered may make a difference. For example, narrative messages work better than logical arguments and statistical evidence in changing attitudes, and humorous messages are more effective than sad messages for threatening topics such as dealing with the shortage of organ supply (Conway & Dubé, 2002; Feeley, Marshall, & Reinhart, 2006; Kopfman, 1996; Weber, Martin, Members of COMM 401, & Corrigan, 2006). Despite all of these efforts to develop interventions that increase organ donation, none of the strategies reported in the literature to date have been especially effective.

Effect of Writing

However, one promising intervention that has not yet to be tested in the context of organ donation is writing. Expressive writing (J. W. Pennebaker, 1997), which was originally designed as an intervention for coping with traumatic events, has been shown to have a variety of positive psychological and behavioral effects on individuals such as reducing blood pressure (Davidson et al., 2002), increasing immune system functioning

among both HIV positive participants and healthy individuals (J. W. Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Rivkin, Gustafson, Weingarten, & Chin, 2006), coping with unemployment (Spera, Buhrfeind, & Pennebaker, 1994), increasing working memory capacity (Klein & Boals, 2001), and reducing absenteeism from work (Francis & Pennebaker, 1992).

However, the mechanisms of how expressive writing works are still not entirely clear. Some potential explanations are that expressive writing may reduce physiological distress by releasing emotions, repeated exposure to memory, and reorganizing memory and emotion (Baikie & Wilhelm, 2005; Foa & Rothbaum, 2001; Greenberg, Wortman, & Stone, 1996; Harber & Pennebaker, 1992; J. W. Pennebaker, 1985). Importantly, some researchers found that participants even benefit from writing about scenarios they did not experience personally; and moreover, narrative information is necessary for expressive writing to be effective (Sloan & Marx, 2004; Smyth, True, & Souto, 2001).

More recently, researchers have been investigating whether writing narrative fiction stories can have the similar impact as expressive writing. Narratives can be defined as stories that share a personal experience (Shaffer & Zikmund-Fisher, 2013), and they are an integral part of how we interact with and understand the world, identifying right from wrong, and remembering past experiences (Bolton, 2006). The narrative writing format enables us to show the experience of another person, whether real or imaginary. Some researchers have suggested that narratives can increase empathy and promote change attitude toward others by creating introspection about the experiences of others (Keen, 2006). For example, writing about patients' illness story can make clinical students have more empathic toward patients (DasGupta & Charon, 2004),

and writing a fiction story about pregnant woman who smokes can make people have a more positive attitude toward people who engage in this behavior (Shaffer, Bohanek, Focella, Horstman, & Saffran, 2019). Training in a writing strategy that takes others' emotion and perception into account can make writer arouse more emotion, have a closer connection to the story and the character, and show a higher level of affective processes (Lie, 2006).

In addition, several models have provided a theoretical framework to describe the processes by which narrative writing can change attitudes. According to the Theory of Narrative Engagement, writing with narratives may be especially effective in changing attitudes and behavior because people tend to engage in narratives, and thus are more likely to have emotional attachment towards the story (Busselle & Bilandzic, 2009). The rationale is when people engage in a story, they will pay more attention and better understand the story, resulting in a greater persuasive effect. In fact, research in health communication has found that expressive writing involving narratives about imaginary or real characters has been used to increase cancer screening behavior, reduce over the counter drug use, and reduce illicit drug use in middle-school students (Kreuter et al., 2007; Shaffer, Focella, Hathaway, Scherer, & Zikmund-Fisher, 2018; Warren et al., 2006). Moreover, writing about events in a narrative form, rather than taking a more fragmented writing (i.e., list feeling, thoughts, characters' action one by one) may be important because it reorganizes memories, feelings, and thoughts (DeSavino, 1993).

In addition, the Extended Transportation-Imagery Model provides support for the importance of narratives in expressive writing. This theory suggests that if the audiences are more transported into the story, they are more likely to develop attitudes and beliefs

consistent with those revealed in the narrative and less likely to develop counter arguments to the message (Green & Brock, 2000, 2002). Further, having a vivid imaginary character in mind before reading or writing a story will help people get more transported into the story, which is more likely to result in attitude change (Van Laer, De Ruyter, Visconti, & Wetzels, 2013; Zheng, 2010), and having a character more similar to the reader will be more likely to induce immersion into the narrative they read (Hoeken, Kolthoff, & Sanders, 2016).

The Present Research

The goal of these two studies is to test whether narrative writing can increase intentions to become an organ donor. Based on previous research, we know that narratives are an effective method of delivering persuasive massages (Kopfman, 1996). Compared to reading a narrative story, narrative writing may have an even greater effect because it can not only make people transported into the story, but also reorganize the feelings, thoughts and emotions about characters in a story (Harber & Pennebaker, 1992; Smyth et al., 2001). Nevertheless, how and why narrative writing works is still not clear. This research will use different writing strategies to test whether the topic or the structure of writing is important in influencing intentions and attitudes towards organ donation.

STUDY 1

In Study 1, female undergraduates who were not currently organ donors were randomly assigned to three groups: the control group, the narrative group and the fragmented group. Participants in the control group wrote about an imaginary weekend; participants in the narrative group wrote about a person in need of kidney transplant. Participants in the fragmented group also wrote about kidney transplants, but instead of writing in narrative form, participants answered several short open-ended questions about kidney transplant situations. Questions assessing participants' attitudes and intentions towards organ donation were given before and after the writing task.

Method

Participants

A total of 322 undergraduate female students enrolled in Psychology 1000 class at the University of Missouri at Columbia were recruited for this study. Female subjects were chosen in order to reduce the variation coming from gender-related writing content (Neff & Karney, 2005; Rueger, Malecki, & Demaray, 2008). Twenty-six participants who had already registered to be organ donors were removed from the study. An additional 28 participants were removed from the study because they were not female. After excluding those observations, the final sample size was 268. This sample included only English native speakers. The demographic characteristics of the participants are shown in Table 1.

Table 1. Demographic Table for Study 1.

Age	M (SD)	18.43 (0.67)
	Range	18-21,

Race	White	209 (77.99%)
	Black or African American	44 (16.42%)
	American Indian or Alaska Native	3 (1.12%)
	Asian	9 (3.36%)
	Native Hawaiian or other Pacific Islander	0 (0.00%)
	Other	3 (1.12%)
Ethnicity	Hispanic or Latino	14 (5.22%)
	Other	254 (94.78%)
Religion	Christian	222 (82.84%)
	Muslim	1 (0.37%)
	Buddhist	0 (0.00%)
	Atheist	1 (0.37%)
	Agnostic	9 (3.36%)
	Non-religious	20 (7.46%)
	Others	15 (5.60%)

N=268

Procedure

Participants were randomly assigned into one of the three groups—control group (n=89), narrative group (n=89) or fragmented group (n=90). This was a 3 (Experimental Groups) x 2 (Pre-Post Test) mixed design, where participants were asked about their attitudes and intentions towards organ donation both before and after a writing task.

In both the control group and the narrative writing groups, participants were asked to create a character for the writing task. To do so, they were instructed to create a name, identify the character's gender and age, and describe the character's appearance. Then both groups were asked to write a short story about the character they created based on a given scenario. For the control group, participants were asked to write a short story about an imaginary weekend for their character. For the narrative writing group, participants were asked to write a short story imaging the character they created was in a serious renal failure situation and could not survive for more than six months without a kidney transplant. Some suggestions were given for both scenarios to help participants start their

writing. Both groups were required to write for at least 10 minutes. The instructions for the writing task are shown in Appendix 1.

In the fragmented writing group, participants were instructed to answer several short open-ended questions based on the scenario given to the narrative writing group (a patient in a serious renal failure situation was told that he/she cannot survive for more than six months without a kidney transplant). However, they did not create a character like the control and narrative writing conditions. The questions given to the fragmented writing group were constructed from the prompts provided to the narrative writing condition (e.g., How many people are on the waiting list, Describe the feelings of the patient and their family) The three conditions are summarized in Table 2.

Table 2. Design for Study 1

	Narrative Group (NG)	Control Group (CG)	Fragmented Group (FG)
Writing Strategy	Creating a character and write a narrative story	Creating a character and write a narrative story	Short answer
Content of Writing	Kidney transplant	An imaginary weekend	Kidney transplant

Outcome Measures

A 7-point attitude and behavior intention scale [1=Strongly disagree, 7=Strongly agree] was given both before and after writing task (Kopfman, Smith, Ah Yun, & Hodges, 1998; Smith, Morrison, Kopfman, & Ford, 1994) to measure the change of intention toward organ donation influenced by the three different writing strategies. This scale included a total of 5 items: 1) I intend to become an organ donor; 2) I am considering the possibility of becoming an organ donor; 3) I am meaning to sign an organ

donor card; 4) I do not intend to become an organ donor; 5) At some time in the future, I plan to become an organ donor (Kopfman et al., 1998).

Linguistic Inquiry and Word Count or LIWC (Pennebaker, Booth, Boyd, & Francis, 2015) was used to analyze the content of the writing for all three groups in this study. LIWC is a computerized text analysis program that counts words in different linguistic categories. LIWC has been used to reveal the relationship between the words and intentions, thoughts, motivations, and behaviors (J. Pennebaker, Boyd, Jordan, & Blackburn, 2015). There are total of 4 main linguistic categories, which including summary language variables, linguistic dimensions, other grammar and psychological processes, and 94 variables in this computing method. While within psychological processes, there are 10 sub-categories and 54 variables.

Previously, many researchers have used this method to analyze the psychological processes in narrative writing and found that narrative content tends to have greater emotional tone and more affective and cognitive words on health related topics (Lie, 2006; J. W. Pennebaker & Seagal, 1999; Shaffer et al., 2019). One of the potential reasons is that the more often writers use emotional, affective or cognitive related words, they will be more likely to take perspective of the character they wrote, increase empathy, and thus be transported into the story more. In addition, researchers have also found that affective processing was significantly associated with both physical and psychological health-related topics (J. W. Pennebaker & Seagal, 1999). Pronoun use in writing has been shown to be a predictor in some health benefit related topics given that it can show the quality of close relationship, which is associated with both psychological and physical health outcome (Bond & Pennebaker, 2012; Tausczik & Pennebaker, 2010). In addition,

some cognitive neuroscientists found that vivid memory and imagination was directly associated with sensory perception; therefore, perceptual processes might be good indicators of how detailed the narrative stories were (Buchsbaum, Lemire-Rodger, Fang, & Abdi, 2012). In this study, we were looking for the differences in both topic and formatting of writing about a physical health-related topic, which typically involves a shared decision among family members; therefore, the variables associated with social and biological processes were also included. Thus, a subset of variables from the summary language variables and linguistic dimensions, as well as 4 subcategories in psychological processes—affective processes, social processes, perceptual processes, and biological processes—were chosen for this analysis.

Study 1 Hypotheses:

Hypothesis 1—The experimental groups will differ in attitudes and intentions towards organ donation.

> H1a: Participants in the narrative group will have greater increases in positive attitudes and intentions towards organ donation compared to those in control group.
>
> H1b: Participants in narrative group will have greater increases in positive attitudes and intentions towards organ donation than the fragmented group.

Hypothesis 2 (H2)—Three experimental groups will differ in some categories in LIWC analysis both in linguistic dimension and psychological processes.

Results

Intervention Analyses

To test H1a and H1b, ordinal logistic regression was used to analyze the change of attitudes and behavioral intentions before and after the writing task cross three experimental groups given that all response variables were ordinal data. The change of intention score was calculated by subtracting the pre-test score from the post-test score. Although the Cronbach's Coefficient Alpha for the original intention scale is 0.76, it was only 0.53 in this study, which indicated the items were not consistent in this study. Therefore, we looked at each item individually.

In partial support of H1a, participants in narrative group were about two times more likely to positively change their intention to become an organ donor (Q1 odds ratio=2.002, 95% CI=1.091-3.724) and twice as likely to plan to become an organ donor sometime in the future (Q5 odds ratio=2.200, 95% CI=1.209-4.069) than the control group; see Table 3. In partial support of H1b, participants in narrative group were about twice as likely to become an organ donor (Q1 odds ratio=2.019, 95% CI=1.101-3.756) and also less likely to endorse the statement that they did not intend to become a donor (Q3 odds ratio=0.546, 95% CI=0.302-0.976) than those in the fragmented group. The remaining items did not support either hypothesis.

Table 3: Ordinal Logistic Regression for Attitude and Behavior Intention toward Organ Donation and the Cronbach's Alpha for the Scale

	Coefficient (β)	Standard Error	Odds Ratio	95% Confident Interval	T value	P value
H1a						
Q1. I intend to become an organ donor						
Control Group	----	----	1	----	----	----
Narrative Group	0.694	0.312	2.002	1.091-3.724	2.222	0.026*
Q2. I am considering the possibility of becoming an organ donor						
Control Group	----	----	1	----	----	----
Narrative Group	0.320	0.291	1.377	0.780-2.446	1.098	0.272

Q3. I am meaning to sign an organ donor card						
Control Group	----	----	1	----	----	----
Narrative Group	0.319	0.288	1.376	0.784-2.426	1.109	0.267
Q4®. I do not intend to become an organ donor						
Control Group	----	----	1	----	----	----
Narrative Group	-0.187	0.296	0.830	0.463-1.481	-0.630	0.528
Q5. At some time in the future, I plan to become an organ donor						
Control Group	----	----	1	----	----	----
Narrative Group	0.788	0.310	2.200	1.209-4.069	2.552	0.011*
H1b						
Q1. I intend to become an organ donor						
Fragmented Group	----	----	1	----	----	----
Narrative Group	0.703	0.312	2.019	1.101-3.756	2.252	0.024*
Q2. I am considering the possibility of becoming an organ donor						
Fragmented Group	----	----	1	----	----	----
Narrative Group	0.425	0.287	1.530	0.874-2.698	1.482	0.138
Q3. I am meaning to sign an organ donor card						
Fragmented Group	----	----	1	----	----	----
Narrative Group	0.176	0.284	1.193	0.684-2.086	0.621	0.535
Q4®. I do not intend to become an organ donor						
Fragmented Group	----	----	1	----	----	----
Narrative Group	-0.605	0.299	0.546	0.302-0.976	-2.024	0.043*
Q5. At some time in the future, I plan to become an organ donor						
Fragmented Group	----	----	1	----	----	----
Narrative Group	0.493	0.290	1.637	0.931-2.901	1.701	0.089

Cronbach's Coefficient Alpha for the Scale	95% Lower Bound	95% Upper Bound
0.530401	0.435257	0.613774

Effect Size	NG-CG	NG-FG
Q1	0.32	0.32
Q4	0.04	0.20
Q5	0.35	0.25

The effect sizes associated with these significant findings ranged from .2 to .35, indicating a weak to medium size of effect for this manipulation (Table 3). These results indicated, at best, a weak association between narrative writing and changing attitude towards organ donation. Further, according to the frequency table for change of intention (Table 4), intention for most of the participants remains unchanged, but the distribution of the narrative group shifted a little bit to the right compared to the fragmented group, which provides some support for H1b. Additionally, the change of scores for the narrative group were mostly larger than the control group, illustrating weak support for

H1a as well. Further, the fragmented group had the largest spread of the change of intention, while the control group was more concentrated than the other two groups.

Table 4. Frequency Table for Change of Intention for Three Groups cross 5-items.

Condition	Item	Value Changed											
		-6	-5	-4	-3	-2	-1	0	1	2	3	4	5
Control Group	Q1					1	3	65	18	2			
	Q2				2	1	15	57	9	3	2		
	Q3						5	51	25	6	2		
	Q4®					4	20	57	6	1	1		
	Q5				2		7	67	12	1			
Fragmented Group	Q1						4	66	18	2			
	Q2		1	1	2	2	16	53	11	3			1
	Q3					1	4	49	25	9	2		
	Q4®			2		2	14	57	9	2	3		1
	Q5	1				1	11	55	19	2	1		
Narrative Group	Q1				1		4	49	27	6	1		1
	Q2			2	1	2	14	44	22	1	2	1	
	Q3					1	4	43	30	10		1	
	Q4®				4	2	24	49	6	1	1	1	1
	Q5			1		2	9	43	26	5	1	2	

LIWC Analyses

To test our H2, LIWC was used to identify differences in writing content between the three groups. In this study, a subset chosen from summary language variables, linguistic dimensions, as well as 4 subcategories in psychological processes—affective processes, social processes, perceptual processes, and biological processes was included in this analysis. The results from Table 5 show that H2 was supported given that the fragmented group significantly differed from both the control group and the narrative group in most of the variables. See Table 6 for a summary of those differences. In general, both the control group and the narrative group tended to write longer stories and use longer sentences or words with more letters in their writing comparing to fragmented group. In addition, writing in control and narrative groups differed in many psychological

categories including affective processes, social processes, perceptual processes, and biological processes, while the narrative and fragmented groups differed in almost all categories. In the linguistic dimension category, the differences between the groups are mainly in their use of personal pronouns. More specifically, the control group and the narrative group tended to use he and she more often than the fragmented group, while the fragmented group had a higher percentage of using I and they. The narrative group scored highest in social processes and female, health related words while the fragmented group scored higher in many other categories such as negative emotion words, anxiety, and sadness related words. An example of this can be found in Table 7 where participants in the narrative group used social-related descriptions such as "as a mother", "with our daughter being so young", "both of our families stayed in contact with each other", etc.; while participants in the fragmented group used more negative emotional words such as "bring up a fatality discussion", "they feel sad and worried", "they feel scared", etc.. However, in the fragmented group, these observed differences in writing content were not related to change in intention or attitudes towards organ donation, which might indicate using more negative words did not necessarily result in greater emotional arousal.

Table 5. LIWC Summary and Comparison Table with Mean and SD in Each Group.

	CG	NG	FG	Statistics F (2, 265)	P value
Summary Language Variables and Linguistic Dimension					
Word Count	271.69(91.96)[a]	283.03(97.9)[a]	172.07(87.85)[b]	41.39	<0.001
Emotional Tone	74.7(22.46)[b]	37.33(25.28)[a]	36.71(28.91)[a]	70.69	<0.001
Word/Sentence	17.55(3.69)[a]	18.2(3.68)[a]	30.97(21.34)[b]	34.75	<0.001
Words>6 letters	15.42(2.99)[a]	14.62(2.97)[a]	17.22(4.71)[b]	12.95	<0.001
Total Function Wd.	54.38(3.79)[b]	55.53(2.98)[a]	56.37(3.85)[a]	7.749	<0.001
Total Pronoun	14.74(3.22)[a]	14.48(2.92)	13.51(3.18)[b]	4.266	0.015
Personal pronouns	10.67(3.06)[a]	9.66(2.42)[b]	7.96(2.83)[c]	23.99	<0.001
I	0.78(2.98)[a]	0.48(1.97)[a]	1.62(1.78)[b]	6.452	0.002
We	0.1(0.32)	0.13(0.58)	0.09(0.33)	0.186	0.830
You	0.11(0.34)[a]	0.11(0.3)[a]	0.54(0.77)[b]	22.11	<0.001

Shehe	7.06(3.45)[a]	6.49(2.79)[a]	0.77(1.4)[b]	165.5	<0.001
They	2.62(2.23)[a]	2.46(1.66)[a]	4.94(2.39)[b]	42.16	<0.001
Psychological Processes					
Affective processes					
Affect	4.97(1.76)[a]	5.85(1.38)[b]	7.9(2.36)[c]	62.89	<0.001
Positive emotion	4.06(1.77)[a]	3.12(1.23)[b]	4.04(1.64)[a]	11.41	<0.001
Negative emotion	0.89(0.69)[a]	2.61(0.96)[b]	3.7(1.56)[c]	153.9	<0.001
Anxiety	0.31(0.41)[a]	0.79(0.68)[b]	1.36(1.07)[c]	45.77	<0.001
Anger	0.12(0.29)	0.09(0.2)	0.1(0.28)	0.457	0.634
Sad	0.26(0.36)[a]	1.11(0.68)[b]	1.79(1.36)[c]	70.82	<0.001
Social processes					
Social	15.41(4.08)[a]	17.12(3.02)[b]	12.93(3.76)[c]	32.48	<0.001
Family	1.12(1.47)[a]	3.29(1.26)[b]	2.29(1.18)[c]	66.69	<0.001
Friend	1.1(1.04)[b]	0.26(0.45)[a]	0.11(0.25)[a]	62.26	<0.001
Female	5.64(4.53)[a]	6.13(3.5)[a]	0.38(0.82)[b]	89.62	<0.001
Male	2.44(3.06)[a]	1.8(2.27)[a]	0.46(0.88)[b]	19.96	<0.001
Perceptual processes					
Perceptual	2.49(1.45)[a]	1.84(1.01)[b]	2.21(1.49)	5.731	0.004
See	1.28(1.05)[b]	0.36(0.47)[a]	0.18(0.35)[a]	70.63	<0.001
Hear	0.57(0.92)	0.72(0.64)[a]	0.36(0.52)[b]	6.314	0.002
Feel	0.5(0.51)[a]	0.67(0.65)[a]	1.63(1.39)[b]	42.16	<0.001
Biological processes					
Biological	1.8(1.33)[b]	3.92(1.37)[a]	3.75(1.7)[a]	62.22	<0.001
Body	0.47(0.6)[a]	1.39(0.87)[b]	2.04(1.12)[c]	76.65	<0.001
Health	0.35(0.52)[a]	2.26(1.07)[b]	1.48(1.06)[c]	106.8	<0.001

Degree of freedom for NG-CG is 176, for NG-FG is 177, and for CG-FG is 177.
Note. Superscripts indicate significant mean differences between groups within each response variable regarding to Tukey comparison (means with superscripts a, b and c are significantly different from each other). Except for total word count, words per sentence and Emotional Tone, which indicated counts, all other means are expressed as percentage of total words used in any given language sample.

Table 6. Summary of Significant Pairs

Category	NG-CG	NG-FG
Summary Language Variable and Linguistic Dimensions	Emotional tone, Total function words, Personal pronouns,	Word Count, Word/sentence, word>6 letters, Personal pronouns, I, You, She/he, They
Affective Processes	Affective, Positive emotion, Negative emotion, Anxiety, Sadness	Affective, Positive emotion, Negative emotion, Anxiety, Sadness
Social Processes	Social, Family, Friend	Social, Family, Female, Male
Perceptual Processes	Perceptual, see	Hear, Feel
Biological Processes	Biological, Body, Health	Body, Health

Table 7. Writing Example from Participants for Study 1

Group	Narrative Group	Fragmented Group	Control Group
Writing Instruction	Please write a ***short story*** describing their transplant processing following the instructions below. You can also add some more details to make this story as vivid as you can. Please do not just answer those questions and put them together. 1. What does the patient and his/her family feel when they heard about this news? 2. How long did the character have to wait to receive their transplant? 3. Describe their experience of waiting for a transplant. What is this character planning to do, how do they feel, and why do they feel that way? 4. What is their reaction (the patient and the family) when they heard about a potential match? 5. What was the response of the potential donor and their family?	Please write a short answer for each of the question below. Please note that you will not be judged by grammar, content, or value. Just write whatever you thought and believe. 1. What do you know about renal failure (i.e. kidney failure)? Imagine that there is a person in serious renal failure (i.e. kidney failure) and was just told by their doctor that he or she cannot survive for more than six months without a kidney transplant. Please answer next 6 questions (Q1 to Q6) based on this setting. Please use full sentences to answer those questions. You will have about 10 minutes on this section, so please take your time. 1. What does the patient and his/her family feel when they heard about this news? 2. How many people are in the waiting list? 3. What is the potential waiting time for this	Now, please write a short story describe one of his or her imaginary weekend. If you have no idea how to write this story, here is the instruction to help you start. You can also add some more details to make this story as vivid as you can. Please do not just answer those questions and put them together. 1. Why this weekend is special? 2. How long has the character plan for this? 3. Who else should be involved in this story? And why? 4. What is this character plan to do, how do they feel, and why do they feel that way? 5. Does this weekend meet his or her expectation? And why?

		person? How they (the patient and the family) feel when they realize this? 4. How was a potential donor identified? What do they (the patient and the family) feel and do when they heard there was a match? 5. What does the potential donors and their family response? 6. What does the patient and his/her family feel and do according to the response from Q5?	
Writing Example	It was Monday morning, 3 days before Bella's 17th birthday when we got the call from her doctor saying she had a serious renal failure. We couldnt believe it. As a mother i immediately thought of everything possible. I would do anything for my daughter to get a kidney transplant. I was sick to my stomach. I knew it wouldnt be easy, but i knew it was possible. I called over 20 hospitals to	I know that it is possible to live with only one kidney but it needs to be healthy. Besides that, I am aware that no healthy kidney may bring up a fatality discussion. They feel sad and worried. They are hopeful that someone can be the savior and they probably consider donating their own organ as well. Many people are in the waiting list hoping for the same savior. The potential waiting time probably	Kelly has been counting down the days until this weekend. This weekend is that day that her friends will be reunited for their first college break. She is excited to sit down and talk to her friends about everyone's new experiences. Kelly has planned a picnic at the beach, something the girls consider a 'tradition'. She packs the snacks and drinks in the backpack, waiting

	see if anyone had someone willing to donate a kidney. With our daughter being so young we were able to get her on top of the list. Bella was third on the list. We waited a couple days, in fear that we would never get a call back. On Bellas birthday we got a call from someone named Tammy James. I gave the phone to Bella, thinking it was someone calling to wish her happy birthday, but sure enough it was a donor! I couldnt believe it, someone was willing to have a kidney transplant to save my daughter! I immediately took the phone and asked for all the information. Both of our families stayed in contact with each other over the next couple days. I was so greatful of Tammy, it was incredible. No words could describe how thankful our family was. Our family did everything we could to help out their family with getting Tammy ready for surgery as well as Bella.	extends past the six month time period given by the doctor. They feel scared and want to provide what is needed to their loved one. A potential donor was identified when a brave soul offered their kidney to the system and it matched the patients. A rush of emotions that lead to happy a group of loving people crying and thanking the savior. They are really happy that they are taking part in something as emotional and almost miraculous. They also want to do what they can to provide a very healthy kidney which means taking care of the person and following instructions. They do what is asked of the doctors, remain contact with the other family and just hope for a successful procedure.	for everyone to arrive at the house. When Kelly sees her friends, she runs to them, acting as though she hasn't seen them in years. They pack the car and drive to the beach. They blast their favorite songs on the way to the beach and can't help but laugh. When the girls arrive at the beach, they unpack their lunches. They finally get to talk about their time in college and how they are adjusting. Kelly was hoping that she was not the only one who was struggling in college. It was relieving to hear that everyone was going through the same things. Kelly noticed how everything, at that moment, was the same. She was nervous that things were going to be different when everyone got home. After the girls talked, Kelly suggested swimming in the water. The girls ran into the water, hoping to cool off

			from the heat. Kelly had such an amazing day, even though it was something the girls always did together. It was a day she would never forget.

Discussion

The goal of this study was to examine the influence of different writing strategies on attitudes and behavioral intentions towards organ donation. This study focused on both the content and the formatting of writing to illuminate some of the mechanisms by which the different writing strategies impact these outcomes. The result of the ordinal logistic regression somewhat supported our H1a and H1b that narrative group had greater change on organ donation intention comparing to the control group and the fragmented group in two of the five organ donation intention items, respectively. However, this conclusion was not very consistent and only supported by two of the five items in intention scale indicating that they were more intending to become organ donor or become organ donor sometime in the future comparing to control group. One potential reason for these inconsistent results is that some participants might not fully engage in the writing task and thus were less likely to be transported into the story they wrote. Another possible explanation is that this intervention was not strong enough to change the intention involving specific behavior such as “sign a card” and “I am considering”.

Our H2 that experimental groups will differ in some linguistic and psychological categories was supported by the LIWC analyses. The results revealed that fragmented writing and narrative writing mainly differ in linguistic structure and psychological

processes, while the narrative group and the control group generally differ in psychological processes and use of pronouns. Although there is a large difference between fragmented writing and narrative writing, the change of intention towards organ donation is not very different between them. These results indicated that using different formatting to write about the same topic had only a little association with the change of the intention and attitude.

There are three main limitations of this study. First, this study cannot be generalized to other genders. This study focused on female subjects only and gender differences in writing was not analyzed here. Secondly, the sample of this study is very homogeneous. This study only recruited undergraduate students from an entry level psychology class; therefore, the result cannot be generalized to the larger population of adults making decisions about organ donation. Finally, this study does not have a longitudinal follow up, so we do not know how long the effects persist and whether the observed changes in intention will result in behavior change.

STUDY 2

In Study 1, we found that narrative writing was associated with change in intention towards organ donation in some of the items. Although a variety of differences in text analyses from both linguistic structure and psychological processes was observed between narrative group and fragmented group, we did not find consistent differences in changing of attitude toward organ donation between those two groups. To address the inconsistent results observed in Study 1, a more powerful narrative writing intervention was developed for Study 2 based on the 'Extended Transportation-Imagery Model'. This model states that if the audience is more transported into the story, they are more likely to develop attitudes and beliefs consistent with those revealed in the narrative and less likely to develop counter arguments to the message (Green & Brock, 2000, 2002). Previous research has shown that having a vivid imaginary character in mind before reading a story will help people get more transported into the story, which is more likely to result in attitude change (Van Laer et al., 2013; Zheng, 2010). Thus, we hypothesize that we will detect larger and more consistent changes within participants who are assigned into a more vivid writing task. In addition to the vividness of the writing task, other work has shown that the use of a character more similar to the reader will be more likely to induce immersion into the narrative (Hoeken et al., 2016). Therefore, we will also test the hypothesis that constructing a similar character will result in greater transportation than the construction of a dissimilar character. To do so, we will employ a 2 (vivid narrative intervention vs. control narrative intervention) x 2 (similar character vs. dissimilar character) factorial design to test the following hypotheses:

Hypothesis 1—The experimental groups will differ in attitudes and behavioral intentions towards organ donation.

H1a: The groups creating similar characters will have more positive attitudes towards organ donation and greater change in intention to become an organ donor than the group creating dissimilar characters.

H1b: The groups constructing a more vivid character will have more positive attitudes towards organ donation and greater change in intention to become an organ donor than the group constructing a less vivid character.

Hypothesis 2 (H2)— Transportation will be associated with attitude and behavior intentions towards organ donation. Participants who are more transported into the story will have more positive attitudes towards organ donation and greater change in intention to become an organ donor.

Hypothesis 3—Four experimental groups will differ in LIWC analyses in some linguistic dimensions and 4 subcategories in psychological processes—affective processes, social processes, perceptual processes, and biological processes.

H3a: Participants who create similar character will have different linguistic and psychological processes (affective processes, social processes, perceptual processes, and biological processes) usage comparing to those who create dissimilar character.

H3b: Participants who construct a more vivid character will have different linguistic and psychological processes (affective processes, social processes,

perceptual processes, and biological processes) usage comparing to those who construct a less vivid character.

Hypothesis 4 (H4)— The use of different linguistic and psychological processes will be associated with organ donation intention.

METHOD

Participants

A total of 321 undergraduate students enrolled in Psychology 1000 at the University of Missouri, Columbia were recruited for this study. After removing 84 ineligible participants who already signed up to be organ donor, the final sample size of this study was 237. This sample included native English speakers only, and the demographic characteristics of this sample are shown in Table 8.

Table 8. Demographic Table for Study 2.

Age	Range	18-23
	M (SD)	18.86 (0.99)
Gender	Female	128 (54.01%)
	Male	109 (45.99%)
Race	White	167 (70.46%)
	Black or African American	39 (16.46%)
	American Indian or Alaska Native	3 (1.27%)
	Asian	20 (8.44%)
	Other	8 (3.38%)
Ethnicity	Hispanic or Latino	21 (8.86%)
	Other	216 (91.14%)
Religion	Christian	171 (72.15%)
	Muslim	2 (0.84%)
	Buddhist	4 (1.69%)
	Atheist	8 (3.38%)
	Agnostic	15 (6.33%)
	Non-religious	23 (9.70%)

	Others	14 (5.91%)
Study setting	In Lab	106 (44.73%)
	Online	131 (55.27%)

N=237

Procedure

Participants were randomly assigned into to one of the four groups (Table 9)—the similar narrative control group (SNC) (n=59), the dissimilar narrative control group (DNC) (n=63), the similar vivid narrative group (SVN) (n=57) and the dissimilar vivid narrative group (DVN) (n=58). This was a 4 (Experimental Groups) x 2 (Pre-Post Test) mixed design study. Similar to the Study 1, participants were asked about their attitude and intentions towards organ donation both before and after the writing tasks. For both similar and dissimilar vivid narrative groups, participants were asked to create a character either very similar to or very dissimilar to them by giving a name, gender, age, appearance, hobbies, personality, close relationship and important life event to the character. Then, they were asked to spend at least 5 minutes writing a vivid short story about this character to further shape the character's personality.

As for both the similar and dissimilar narrative control group, instead of creating a character and writing a narrative story, participants were asked to write a description about the room they are sitting in for 5 minutes. After that, a second writing task, taking about 8 minutes, was given to all four groups. Participants in both vivid narrative groups wrote a short story about their previously constructed character being in need of a kidney transplant, while participants in the similar narrative control group and the dissimilar narrative control group wrote a story about a new character either similar to or dissimilar

to them in need of a kidney transplant. The instructions for the writing task are given in Appendix 2.

Table 9. Design for Study 2

	Similar Vivid Narrative Group (SVN)	Dissimilar Vivid Narrative Group (DVN)	Similar Narrative Control Group (SNC)	Dissimilar Narrative Control Group (DNC)
First Writing Task	Creating a character that is very similar to the participant, and then write a story to shape his or her personality.	Creating a character that is very dissimilar to the participant, and then write a story to shape his or her personality.	Describe the room participants are sitting in.	Describe the room participants are sitting in.
Second Writing Task	Imaging character from previous writing is in a kidney transplant scenario.	Imaging character from previous writing is in a kidney transplant scenario.	Imaging someone very similar to the participant is in a kidney transplant scenario.	Imaging someone very dissimilar to the participant is in a kidney transplant scenario.

Outcome Measures

We used the same scale measuring intention to become an organ donor as Study 1 (Kopfman et al., 1998); participants completed the scale before and after the writing tasks. Additionally, a 14-item character similarity scale was given at the end of the second writing task to evaluate the similarity between participants and their character. Among them, 7 of the items were adopted from a perceived homophily scale created by McCroskey, Richmond, and Daly (1975). An 11-item transportation scale (α=0.76) was then given to evaluate how much participants are transported into the narrative (Green & Brock, 2000) followed by a 4-item identification scale (α=0.95), which was given to evaluate participants' identification with the character in the story (Dal Cin, Gibson, Zanna, Shumate, & Fong, 2007; Dal Cin, Zanna, & Fong, 2004). Finally, to measure behavioral intention, participants answered a single additional question about their

likelihood of becoming a donor within one month. Unlike the previous study which used a seven-point Likert scale, a numerical slider bar was used to record responses to all items in this study. LIWC was used again to analyze the content of those writing tasks.

Results

Manipulation Check

Before testing our hypotheses, we want to check whether our manipulation is effective or not. To conduct a test of our similarity and vividness manipulations, participants provided self-reported measures of the similarity and vividness associated with the narrative stories they had written. Table 10 and 11 shows the correlations between the perceived homophily scale, the similarity scale, and the identification scale. The self-created similarity items are significantly positively correlated with the 7 items adopted from the perceived homophily scale (McCroskey et al. (1975); therefore we combined the two sets of items into a single similarity scale. The Cronbach's Alpha for this new 14-item Similarity Scale is 0.93, 95% CI [0.92, 0.94] (Table 10). The correlation between the identification scale and the similarity scale (Table 11) showed that they were very consistent and positive scores on identification scale were significantly associated with positive scores in similarity scale; therefore, both scale can be used to measure the similarity between the character in narrative story and writer themselves very well. Additionally, 10 items from the 11-item Transportation Scale (Green & Brock, 2000), which measures how much participants are transported into the narrative story, were used to measure the vividness of the narrative. We chose to drop one of these items because they cannot be applied to our study setting. The original Cronbach's Alpha for this scale was 0.76; and in this study, it was 0.65, 95% CI [0.59, 0.72].

Table 10. Correlation Table for Similarity Scale: 7-items from Perceived Homophily Scale and 7 Self-Created Similarity Items

Means, standard deviations, and correlations with confidence intervals

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. This character is very similar to some stage of me or who I used to be.	3.98	1.90							
2. This character is very similar to a family member or a close friend who I loved.	3.80	1.95	.33**						
			[.21, .4]						
3. This character is very similar to a person I dislike.	1.97	1.46	-.18**	-.13*					
			[-.30, -.05]	[-.25, -.00]					
4. This character is who I wish to be.	2.98	1.88	.36**	.31**	-.14*				
			[.24, .4]	[.19, .4]	[-.27, -.0]				
5. This character is someone I never want to be.	2.71	2.07	-.35**	-.09	.37**	-.38**			
			[-.46, -.2]	[-.21, .0]	[.26, .48]	[-.48, -.2]			
6. I like the character I created.	5.10	1.83	.38**	.31**	-.34**	.40**	-.36**		
			[.26, .48]	[.19, .42]	[-.45, -.2]	[.29, .50]	[-.46, -.2]		

7. I don't like the character I created.	1.99	1.60	-.23**	-.12	.55**	-.21**	.53**	-.58**	
			[-.35, -.1]	[-.25, .0]	[.45, .63]	[-.33, -.0]	[.43, .61]	[-.66, -.4]	
8. Perceived Homophily Scale	4.12	1.70	.68**	.34**	-.34**	.45**	-.44**	.58**	-.40**
			[.60, .74]	[.23, .45]	[-.45, -.2]	[.35, .55]	[-.54, -.3]	[.48, .66]	[-.50, -.2]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Table 11. Correlation Between Similarity Scale and Identification Scale
Means, standard deviations, and correlations with confidence intervals

Variable	*M*	*SD*	1	2	3	4
1. I found that I could easily take the perspective of the person I write about.	4.98	1.74				
2. I found myself thinking what he/she might have been thinking.	5.10	1.70	.69**			
			[.62, .75]			
3. I found myself feeling what he/she might have been feeling.	4.85	1.79	.62**	.74**		
			[.53, .69]	[.68, .80]		
4. I easily identified with this person.	4.10	1.92	.58**	.49**	.56**	
			[.49, .66]	[.38, .58]	[.47, .65]	
5. Similarity	4.43	1.33	.46** [.35, .55]	.34** [.23, .45]	.44** [.34, .54]	.68** [.60, .74]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The

confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

Intervention and Measurement Analyses

To test H1a similarity intervention and H1b vividness intervention, two-way ANOVA and beta regression were used to analyze their main effect towards participants' change of organ donation intention and their likelihood to become an organ donor within one month, respectively. In Study 2, the Cronbach's Coefficient Alpha for the intention scale was 0.66 (95% CI=0.59-0.73), much higher than the previous study; therefore, we decided to use the scale instead of analyzing the individual items. To construct the scale, we averaged all 5 intention items (with the appropriate items reverse coded). The change of intention score was calculated by subtracting the pre-test score from the post-test score.

Figure 1 shows the distribution of change scores for the organ donation intention scale and the distribution of reported likelihood to become a donor within one-month across the vividness conditions (vivid narrative or vivid control), similarity conditions (similar or dissimilar) and research settings (online or in lab). The density plots in the first row indicate that change of intention towards organ donation is normally distributed. The second row reveals that the distributions for the likelihood to become donor within one month were not normal; therefore, a data transformation was needed for the further data analyses. In addition, those density plots showed that the vividness and similarity conditions both had very similar distribution for both response variables, which indicated that there are not large group differences cross those interventions. However, participants

who took survey online during the stay-at-home order indicated that they are more likely to become a donor within one-month compared to those who took survey in lab.

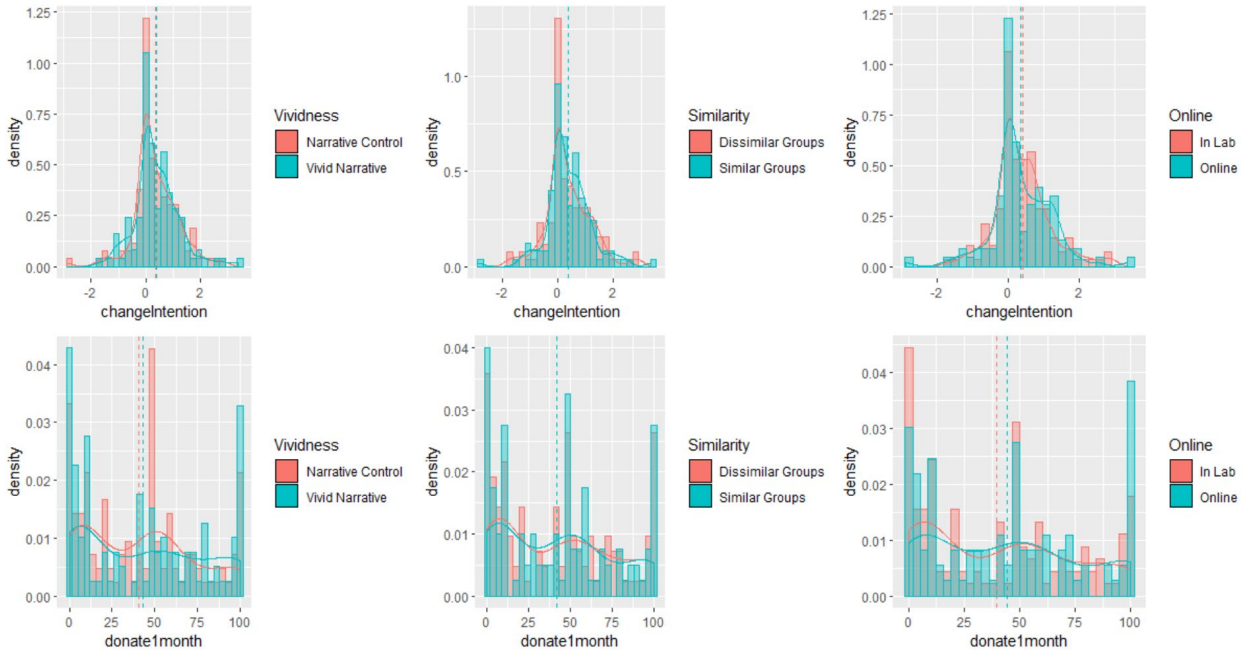

Figure 1. Distribution of Change of Intention cross Different Vividness Groups (Top left), Similarity Groups (Top middle), Research Setting (Top right) and Intention to Donate Within One Month cross Different Vividness Groups (Bottom left), Similarity Groups (Bottom middle), Research Setting (Bottom right).

In Study 1, we did an ordinal regression on the change score for the organ donation intention scale because those were all ordinal data; while in Study 2, we used the two-way ANOVA for the same response variable to test our H1a and H1b since data were all continuous this time. The result showed that there was no significant main effect of similarity and vividness intervention for the change of intention toward organ donation (Table 12).The beta regression also tested our H1a and H1b was conducted on the continuous behavioral intention outcome variable, which had not been tested in Study 1 before, with interval between 1 to 100—likelihood to sign up to become a donor within one month. A beta transformation was applied to make sure response values were all in the open standard unit interval (0,1). The result revealed no significant main effect can be

observed (Table 13). Besides, the effect size of this study was very small (Table 14), which indicated this study design had very small effect on organ donation intention. Therefore, our H1a and H1b were not supported by these analyses.

Table 12. Two-Way ANOVA Table for Predicting Change of Intention towards Organ Donation before and after Writing Tasks.

Predictor	SS	df	MS	F	P value
Vividness Condition	0.06	1	0.06	0.08	0.77
Similarity Condition	0.06	1	0.06	0.09	0.76
Error	155.60	234	0.67		

Table 13. Beta Regression Table for Predicting Likelihood to Become Organ Donor within One Month

Predictors	Estimates	SE	Z value	P value
(Intercept)	-0.24	0.14	-1.72	0.08
Vividness Condition [Vivid Narrative]	0.11	0.16	0.65	0.52
Similarity Condition [Similar]	-0.02	0.16	-0.13	0.90

Table 14 showed that the experimental groups who wrote about similar others had significantly higher mean similarity and identification scores than the experimental groups who wrote about dissimilar others, which indicated the similarity intervention was effective. However, the vivid narrative groups and narrative control groups did not differ significantly in transportation scores, which indicated adding a vivid character creating task did not necessarily make participants more transported into the story.

Table 14. Group Comparison Table for Scales

Covariate Variables	Similar Groups	Dissimilar Groups	T value	P value	Effect Size	Vivid Narrative Groups	Narrative Control Groups	T Value	P value	Effect Size
Group Differences for each Scale										
Similarity Scale	5.00 (1.13)	3.88 (1.28)	7.11	**<0.01**		-	-	-	-	
Identification Scale	4.97 (1.51)	4.55 (1.48)	2.20	**0.03**		-	-	-	-	
Transportation Scale	4.31 (0.86)	4.19 (0.89)	1.13	0.26		4.28 (0.89)	4.22 (0.86)	0.55	0.58	

Group Differences for Response Variables										
Change of Intention	0.39 (0.82)	0.36 (0.81)	0.31	0.76	0.04	0.39 (0.81)	0.36 (0.81)	0.29	0.77	0.01
Likelihood to Become Donor within 1 Month	41.76 (33.60)	41.74 (33.94)	0.00	1	0.04	42.83 (35.78)	40.74 (31.73)	0.48	0.64	0.05

A multiple regression including three scales was conducted to further test H1a and H2 given that our manipulation was partially effective, but our interventions did not have a significant impact on attitudes towards and intentions to donate organs. From this analysis, we want to check if a self-reported similarity between the character and writer or a self-reported transportation feeling was associated with organ donation intention. Partial support for H1a and H2 can be found in Table 15. These analyses reveal that transportation (*T=2.54, p=.01*) and similarity (*T=2.17, p=.03*) were significant predictors of change in organ donation intention. Participants who were more transported into the narrative story they wrote and were more similar to the character they wrote tended to have larger increase of organ donation intention.

Table 15. Regression for Predicting Change of Intention towards Organ Donation before and after Writing Tasks and Likelihood to Become Donor within 1 Month

Predictors	Estimates	SE	T value	P value
Change of Intention				
(Intercept)	-0.48	0.27	-1.77	0.08
Identification	-0.1	0.05	-1.88	0.06
Transportation	0.20	0.08	2.54	**0.01**
Similarity	0.10	0.05	2.17	**0.03**

Predictors	Estimates	SE	Z value	P value
Likelihood to Become Donor within 1 Month				
(Intercept)	-1.04	0.43	-2.44	0.01
Identification	0.15	0.08	1.87	*0.06*
Transportation	0.01	0.12	0.08	0.94

Similarity	0.01	0.08	0.19	0.85

LIWC Analyses

A text analysis was conducted to test H3a and H3b that participants who create a similar character or constructing a more vivid character would use different linguistic and psychological processes words—including affective processes, social processes, perceptual processes, and biological processes—than those who create a dissimilar character or constructing a less vivid character. In support of H3a and H3b, similar groups differed from dissimilar groups in writing task 1, using more emotional tone, more positive emotion words; see Table 16. For example, the two similar groups (Similar Narrative Control group and Similar Vivid Narrative Groups) used phrases like “quiet and calm”, “fall in love”, “successful career”, “she was in a happy relationship of two years with the most loving and caring man”, etc. in writing their first scene. While the two dissimilar groups tended to use more negative emotional words, anger, and sad related phrases such as “things are old, vintage, and creepy”, “feels very weird”, “don't really like this room, nor do I like the building”, “a tall, overweight girl that nobody knows”, etc.

Because the vivid narrative groups and narrative control groups had very different writing tasks, we observed differences in most of the summary language variables and psychological processes. For example, vivid narrative groups tended to write longer stories, use more complicated words, pronouns, affective processes words, social processes words, biological process words. The two vividness groups (Vivid Narrative Groups) used phrases like “go to college”, “fall in love”, and “sought out help from friends and family and even staff on campus”. In contrast, the other two control groups

(Narrative Control Groups) tended to use more function and perceptual processes words, writing phrases like “smell the aroma of the food and coffee all around me”, “hear the scrubbing of the floors”, and “is very chilly”.

For the second writing task, since all groups were asked to write the same content, the differences between groups were not as large. Similar groups mentioned more family related words such as “family gathering”, “her mother sat in distress wailing about her baby while her father wrapped an arm around her”, and “her boyfriend” than dissimilar groups. And vivid narrative groups differed from narrative control groups in their use of social processes phrases like “they go together to see her family then his family to share the news of the pregnancy”, “a tear rolls down her boyfriend’s cheek as he waits in the waiting room”, and “her mother took her”. While narrative control groups tended to use more anxiety related phrases like “most terrifying days of her life”, “aunts and uncles sat anxiously”, and “feels desperate”. A summary of those differences is provided in Table 17 and illustrative quotes revealing the differences between the narrative control groups and vivid narrative groups in writing task 1 and the similar groups and dissimilar groups in writing task 2 are shown in Table 18.

Table 16. Group Comparison Table for LIWC Analyses

Covariate Variables	Similar Groups	Dissimilar Groups	t value	P value	Vivid Narrative Groups	Narrative Control Groups	t Value	P value
LIWC Analyses								
Writing Task 1								
Summary Language Variables and Linguistic Dimension								
Word Count	153.08 (90.62)	151.28 (66.86)	0.18	0.86	185.28 (91.04)	120.95 (49.07)	6.82	**<0.01**
Emotional tone	55.38 (28.34)	44.68 (29.05)	2.87	**<0.01**	51.76 (31.18)	48.18 (27.09)	0.95	0.35
Word/Sentence	16.28 (5.33)	16.07 (4.36)	0.33	0.75	16.74 (4.23)	15.64 (5.33)	1.75	0.08
Words>6 letters	15.14 (3.98)	13.31 (4.18)	1.56	0.12	14.57 (3.95)	12.91 (4.08)	3.18	**<0.01**

Total Function Wd.	55.72 (6.15)	55.59 (7.26)	0.15	0.88	54.71 (4.67)	56.55 (8.13)	-2.11	**0.04**
Total Pronoun	14.27 (4.60)	13.58 (4.32)	1.19	0.24	15.54 (3.58)	12.39 (4.68)	5.78	**<0.01**
Personal pronouns	9.52 (4.52)	9.02 (4.17)	0.88	0.38	11.54 (3.24)	7.13 (4.18)	9.04	**<0.01**
Psychological Processes								
Affective processes								
Affect	3.72 (2.53)	3.60 (2.48)	0.37	0.71	4.83 (2.22)	2.56 (2.24)	7.82	**<0.01**
Positive emotion	2.76 (2.20)	2.21 (1.82)	2.09	**0.04**	3.04 (1.87)	1.95 (2.04)	4.29	**<0.01**
Negative emotion	0.90 (1.06)	1.33 (1.58)	-2.46	**0.01**	1.72 (1.58)	0.56 (0.80)	7.14	**<0.01**
Anxiety	0.28 (0.50)	0.22 (0.58)	0.84	0.40	0.42 (0.66)	0.09 (0.33)	4.79	**<0.01**
Anger	0.16 (0.36)	0.36 (0.87)	-2.27	**0.02**	0.46 (0.89)	0.08 (0.27)	4.42	**<0.01**
Sad	0.19 (0.44)	0.33 (0.58)	-2.04	**0.04**	0.37 (0.64)	0.16 (0.34)	3.27	**<0.01**
Social Processes								
Social	10.51 (8.66)	9.53 (8.44)	0.88	0.38	17.70 (5.22)	2.76 (2.78)	27.71	**<0.01**
Family	0.86 (1.50)	0.94 (1.59)	-0.4	0.69	1.67 (1.79)	0.17 (0.73)	8.51	**<0.01**
Friend	0.35 (0.77)	0.38 (0.73)	-0.31	0.76	0.67 (0.92)	0.07 (0.35)	6.68	**<0.01**
Female	2.73 (4.76)	2.37 (4.23)	0.60	0.55	4.95 (5.46)	0.28 (0.81)	9.36	**<0.01**
Male	2.67 (4.50)	4.78 (3.11)	-0.73	0.47	5.74 (5.25)	0.21 (1.02)	11.3	**<0.01**
Perceptual processes								
Perceptual	4.01 (3.18)	3.82 (2.63)	0.49	0.63	2.53 (1.86)	5.22 (3.11)	-8.03	**<0.01**
See	2.08 (2.27)	2.10 (2.11)	-0.05	0.96	1.07 (1.31)	3.05 (2.41)	-7.76	**<0.01**
Hear	0.73 (1.09)	0.74 (1.08)	-0.09	0.93	0.72 (1.06)	0.75 (1.10)	-0.21	0.83
Feel	0.97 (1.25)	0.91 (1.10)	0.41	0.68	0.67 (0.90)	1.19 (1.34)	-3.52	**<0.01**
Biological processes								
Biological	1.89 (1.83)	1.81 (1.77)	0.37	0.71	2.52 (1.92)	1.22 (1.40)	5.60	**<0.01**
Body	0.50 (0.91)	0.52 (0.78)	-0.12	0.91	0.63 (0.95)	0.39 (0.71)	2.20	**0.03**
Health	0.69 (0.99)	0.59 (0.85)	0.82	0.42	1.00 (1.07)	0.30 (0.58)	6.35	**<0.01**
Writing Task 2								
Summary Language Variables and Linguistic Dimension								
Word Count	222.11 (107.49)	217.22 (112.01)	0.34	0.73	213.84 (95.29)	225.06 (121.74)	-0.79	0.43

Emotional tone	38.93 (28.92)	33.79 (27.67)	1.4	0.16	38.06 (28.59)	34.65 (28.13)	0.93	0.36
Word/Sentence	17.87 (5.96)	17.71 (5.49)	0.22	0.83	17.55 (4.70)	18.02 (6.54)	-0.63	0.53
Words>6 letters	14.22 (3.55)	14.34 (4.86)	-0.23	0.82	13.97 (3.23)	14.58 (5.04)	-1.11	0.27
Total Function Wd.	56.65 (4.66)	55.96 (6.40)	0.94	0.35	55.89 (4.08)	56.68 (6.75)	-1.07	0.38
Total Pronoun	15.34 (4.18)	14.46 (3.85)	1.69	0.09 *	14.71 (3.52)	15.06 (4.46)	-0.67	0.50
Personal pronouns	10.24 (3.40)	9.74 (3.40)	1.13	0.26	9.91 (3.12)	10.06 (3.66)	-0.34	-.74
Psychological Processes								
Affective processes								
Affect	6.41 (2.49)	6.14 (6.41)	0.86	0.39	6.26 (2.30)	6.29 (2.36)	-0.12	0.91
Positive emotion	3.29 (1.78)	3.11 (1.56)	0.82	0.42	3.25 (1.66)	3.15 (1.69)	-0.45	0.65
Negative emotion	2.97 (1.97)	2.92 (1.52)	0.23	0.82	2.89 (1.87)	3.00 (1.64)	-0.45	0.66
Anxiety	0.93 (0.97)	0.89 (0.97)	0.30	0.76	0.77 (0.82)	1.04 (1.08)	-2.18	**0.03**
Anger	0.13 (0.28)	0.17 (0.42)	-0.93	0.36	0.17 (0.35)	0.14 (0.36)	0.60	0.55
Sad	1.16 (1.15)	1.18 (0.87)	-0.19	0.85	1.28 (1.17)	1.07 (0.84)	1.55	0.12
Social Processes								
Social	15.78 (4.99)	15.58 (4.43)	0.33	0.74	16.42 (4.49)	14.98 (4.81)	2.38	**0.02**
Family	2.72 (1.63)	2.17 (1.25)	2.89	**<0.01**	2.69 (1.70)	2.20 (1.18)	2.61	**<0.01**
Friend	0.30 (0.62)	0.21 (0.39)	1.35	0.18	0.36 (0.64)	0.15 (0.33)	3.10	**<0.01**
Female	3.58 (4.02)	2.96 (3.82)	1.22	0.23	3.85 (3.87)	2.71 (3.90)	2.25	**0.03**
Male	3.09 (3.78)	3.93 (4.09)	-1.64	0.10	4.17 (4.05)	2.91 (3.78)	2.49	**0.01**
Perceptual processes								
Perceptual	2.21 (1.26)	2.05 (1.14)	1.06	0.29	1.99 (1.12)	2.26 (1.26)	-1.73	0.08 *
See	0.51 (0.59)	0.43 (0.56)	1.06	0.29	0.47 (0.61)	0.46 (0.54)	0.10	0.92
Hear	0.84 (0.80)	0.70 (0.71)	1.40	0.16	0.73 (0.71)	0.80 (0.80)	-0.68	0.5
Feel	0.80 (0.82)	0.83 (0.76)	-0.20	0.84	0.73 (0.67)	0.90 (0.88)	-1.65	0.1
Biological processes								
Biological	3.90 (1.72)	3.83 (1.68)	0.29	0.77	3.89 (1.77)	3.84 (1.63)	0.25	0.80
Body	1.53 (1.27)	1.36 (0.99)	1.11	0.27	1.48 (1.26)	1.41 (1.02)	0.52	0.60

Health	2.15 (1.41)	2.26 (1.35)	-0.63	0.53	2.20 (1.41)	2.21 (1.35)	-0.06	0.95

Degree of freedom is 235. Note. Except for total word count, words per sentence and Emotional Tone, which indicated counts, all other means are expressed as percentage of total words used in any given language sample.

Table 17. Summary of LIWC Analyses

Category	Similar Groups >Dissimilar Groups	Vivid Narrative > Narrative Control
Writing Task 1		
Summary Language Variable and Linguistic Dimensions	Emotional tone	Word Count, word>6 letters, Total Function Word*, Total pronouns, Personal pronouns,
Affective Processes	Positive emotion, Negative emotion*, Anger*, Sadness*	Affective, Positive emotion, Negative emotion, Anxiety, Anger, Sadness
Social Processes		Social, Family, Friend, Female, Male
Perceptual Processes		Perceptual*, Feel*, See*
Biological Processes		Biological, Body, Health
Writing Task 2		
Summary Language Variable and Linguistic Dimensions		
Affective Processes		Anxiety*
Social Processes	Family	Social, Family, Friend, Female, Male
Perceptual Processes		
Biological Processes		

Note. * indicates mean of similar groups is *smaller* than dissimilar groups *(Similar Groups < Dissimilar Groups)* or mean of vivid narrative groups is *smaller* than narrative control groups *(Vivid Narrative < Narrative Control)*.

Table 18. Writing Quotation from Participants for Study 2

	Writing Task 1: Character Creating	Writing Task 2: Kidney Transplant Scenario
Narrative Control Groups	The room I am sitting in is like an conference room with "cubicles" so it kind of feels like and office job. The building is a very	

	antique vibe so things are old, vintage, and creepy.	
Vivid Narrative Groups	Stacy always thought she had a plan for her future. Ever since she was a freshman in highschool she knew she wanted to go to college, fall in love, have a successful career and raise two beautiful babies.	
Similar Groups		Maggie, a student at Mizzou, has been getting weird symptoms lately. She hasn't been feeling the greatest but didn't realize how serious it really way. She called her mom at home and told her about it. Her mom decided to come up to Mizzou to accompany her to the doctor. The doctor did many tests on her before coming to her with the news. The doctor came into the patient's room at the hospital and gave her and her mother the news that she wasn't expecting, the news that she had kidney failure.
Dissimilar Groups		Mary has been heavily drinking every day for the past 13 years. She is only 33 and now has been told that she has kidney failure. She is of course upset about the news but still continues to drink. Her family members have tried to help in the past but she never listened so they gave up. In her desperate time of need 3 months later the doctor called and said it was a miracle.

While significant differences were observed in the text of the narrative writing exercises between the groups, it is unclear how these differences in written content are associated with change in our primary outcome variable, organ donation intention. To further test H4, a series of analyses were conducted on the significant different LIWC categories in writing task 2 given that in this task participants cross all experimental groups were asked to write about the same kidney transplant scenario. In support of H4, participants who talked more about social-related words (*T=2.55, p=.01*) and less about gender-related words (*Female: T=-2.88, p<.01; Male: T=-2.45, p=.01*) tended to have more positive change of intention towards organ donation; see Table 19.

Table 19. LIWC Analyses for Predicting Change of Intention towards Organ Donation before and after Writing Tasks and Likelihood to Become Donor within 1 Month

Predictors	Estimates	SE	T value	P value
Change of Intention				
(Intercept)	0.12	0.19	0.63	0.53
Family	-0.09	0.06	-1.51	0.13
Anxiety	-0.02	0.09	-0.18	0.86
Social	0.07	0.03	2.55	**0.01**
Friend	-0.00	0.12	-0.01	0.99
Female	-0.09	0.03	-2.88	**<0.01**
Male	-0.07	0.03	-2.45	**0.01**
Predictors	Estimates	SE	Z value	P value
Likelihood to Become Donor within 1 Month				
(Intercept)	-0.18	0.30	-0.62	0.54
Family	0.10	0.10	0.99	0.32
Anxiety	-0.08	0.15	-0.53	0.60
Social	-0.02	0.04	-0.46	0.65
Friend	0.09	0.18	0.47	0.64
Female	0.01	0.05	0.14	0.89
Male	0.02	0.04	0.52	0.61

Discussion

In Study 1, we found that the writing about kidney transplant scenario increased organ donation intention for some items compared to writing about other neutral content. And narrative writing format will lead to more positive organ donation intention for some items compared to the fragmented writing format. LIWC analyses for Study 1 revealed that writing the same content in different formats differed only in linguistic structure and psychological processes but not in behavioral intention and attitude towards organ donation.

The goal of this Study 2 was to examine whether increasing the similarity and vividness of a character in narrative writing can increase transportation and create more positive attitudes toward organ donation and increase intentions to become an organ donor. H1a and H1b were not supported by the results of the intervention. However, analyses based on the transportation and similarity scales provided some support H1a and H2. Participants who were more transported into the narrative story they wrote and were more similar to the character they wrote tended to have greater change in organ donation intention.

One interesting finding is that although our manipulated interventions were not significant across experimental groups in predicting change of intention to be an organ donor, the associative self-reported measures of similarity and transportation showed that when people who rated themselves writing about similar characters and felt they were more transported into the story tended to exhibit greater attitude change. Transportation is an individual difference measure, indicating that some individuals have a greater ability to be transported into stories. For example, even though people are reading the same story

or watching the same movie, some people will always be touched more than the others. This individual difference appears to be more powerful than any of the experimental manipulations.

Although our experimental manipulations were not consistently effective, we can still see that people who reported more similarity to the character they created and were more transported into the story tended to have more positive attitudes towards organ donation. This finding is consistent with the Extended Transportation-Imagery Model, which states that when the audience is more transported into the story they read, they tended to have more consistent values and beliefs with those of the characters in the story. For example, in our study, participants were asked to write about a person who cannot survive without kidney transplant; therefore, even though they did not sign up to be a donor, most of them (about 97.5%) still let their character find a donor and be saved in their narrative story. Because of this narrative writing process, participants might become more consistent with the idea revealed in the story that human lives are directly related to organ donation and have more positive attitude towards this topic. In addition, we found that most of the linguistic differences observed between the different experimental conditions were not significant predictors of attitudes towards organ donation and intentions to become an organ donor except social and gender related words.

Previously, many organ donation studies were based on the Theory of Reasoned Action, which indicates that attitude influence intention and intention directly predicts behavior (Fishbein & Ajzen, 1977). Plenty of interventions were tested in order to increase intention towards organ donation, which includes legislation, mass media,

financial rewards etc. (Abadie & Gay, 2006; Prottas, 1992; Quick, 2009). Our study tested the narrative writing intervention, which had successfully influenced intentions and attitudes in other health related topics by increasing empathy but had never been applied to this area before (Shaffer et al., 2019). And we found that this intervention can increase the organ donation intention by writing a similar character and getting transported into the narrative story. Further, certain linguistic usages in narrative, social and gender references, were associated with this change of intention.

These results also added some more idea of narrative writing implementations in social media. In this era of social media, people are willing to read, write, and share their stories and opinions about health related topics such as the organ shortage and opioid drug use everywhere through blogs, Twitter, Quora, etc. The more people engage in these activities, the more likely they will be transported into these topics. Therefore, using social networking to guide people involve in more narrative reading or writing may be a potential avenue to influence attitudes and intentions towards more and more health or social topics in the future.

There are four main limitations of this study. First, the measurement for vividness was not straightforward. We only measured how much people were transported into the story but the vividness of those stories themselves was not measured in this study. Secondly, the effect size of this study design is very small, which means although some of the predictors or interaction in this study were significant, it still cannot be used as a strong evidence to support our hypotheses. Additionally, the sample only included college undergraduate students; therefore, the results cannot be generalized to other population. Finally, those two studies still remained in the stage of intention. Therefore,

how long the effects persist and whether the observed changes in intention will result in actual behavior is still a question.

Our future research will focus on creating a more vivid intervention to make people transported into the narrative, creating a scale which can measure vividness directly, having a deeper analysis of narrative writing, and a more sufficient narrative to have a better understanding about how writing can result in attitude and behavior change. In our next study, participants will have longer writing; and instead of a writing direction, a vivid narrative example about other neutral topic will provided to prevent restriction on writers' imagination. Besides, to measure vividness of stories, a consistent standard was necessary. We can probably have a trained human rater or computer rater to score all stories created by the participants. In addition, some machine learning technologies have started to apply in linguistic analyses recently. Future work can utilize different writing topics and narrative scenarios and should include measures of participants' attitude towards writing itself. In addition, Natural Language API can also be used to quantify the language message of the whole text and adding entity analysis, entity sentiment analysis, content classification and syntax analysis to the data analyses.

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Appendix 1

In this section, you will be asked to do some creative writing about a character you create. Don't worry if you have never written fiction before, you will be given instructions to help you finish this part. It's fine to use some details in real life to create your character and story. Just try to use your imagination to write about them in a vivid way. You will have about 20 minutes to finish this part.

Now, let's start to create your character.

Control Group:

Please create a character (a person) as you like follow the instruction below:

1. What is the name of your character?
2. What is their gender?
3. How old is your character?
4. Describe their skin/hair eye color.
5. What are their hobbies?
6. Anything else you want to mention about your character?

Now, please write a short story describe one of his or her imaginary weekend. If you have no idea how to write this story, here is the instruction to help you start. You can also add some more details to make this story as vivid as you can. Please do not just answer those questions and put them together.

1. Why this weekend is special?
2. How long has the character plan for this?
3. Who else should be involved in this story? And why?
4. What is this character plan to do, how do they feel, and why do they feel that way?
5. Does this weekend meet his or her expectation? And why?

Please note that you will not be judged by grammar, content or value. Please write the story in a format and style that feels best to you. Please write as much as you can for the next eight minutes. The button to the next question WILL NOT APPEAR WITHIN 10 MINUTES.

Narrative Group:

Please create a character (a person) as you like follow the instruction below:

1. What is the name of your character?
2. What is their gender?
3. How old is your character?
4. Describe their skin/hair eye color.

5. What are their hobbies?
6. Anything else you want to mention about your character?

Please write a ***short story*** describing their transplant processing following the instructions below. You can also add some more details to make this story as vivid as you can. Please do not just answer those questions and put them together.

1. What does the patient and his/her family feel when they heard about this news?
2. How long did the character have to wait to receive their transplant?
3. Describe their experience of waiting for a transplant. What is this character planning to do, how do they feel, and why do they feel that way?
4. What is their reaction (the patient and the family) when they heard about a potential match?
5. What was the response of the potential donor and their family?

Please note that you will not be judged by grammar, content or value. Write the story in a format and style that feels best to you. Please write as much as you can for the next eight minutes. The button to the next question WILL NOT APPEAR WITHIN 10 MINUTES.

Fragmented Group

Please write a short answer for each of the question below. Please note that you will not be judged by grammar, content or value. Just write whatever you thought and believe.

2. What do you know about renal failure (i.e. kidney failure)?

Imagine that there is a person in serious renal failure (i.e. kidney failure) and was just told by their doctor that he or she can not survive for more than six months without a kidney transplant. Please answer next 6 questions (Q1 to Q6) based on this setting. Please use full sentences to answer those questions. You will have about 10 minutes on this section, so please take your time.

7. What does the patient and his/her family feel when they heard about this news?
8. How many people are in the waiting list?
9. What is the potential waiting time for this person? How they (the patient and the family) feel when they realize this?
10. How was a potential donor identified? What do they (the patient and the family) feel and do when they heard there was a match?
11. What does the potential donors and their family response?
12. What does the patient and his/her family feel and do according to the response from Q5?

Appendix 2

In this section, you will be asked to do some creative writing about a character you create. Don't worry if you have never written fiction before, you will be given instructions to help you finish this part. It's fine to use some details in real life to create your character and story. Just try to use your imagination to write about them in a vivid way. You will have about 20 minutes to finish this part.

Now, let's start to create your character.

Writing for both Similar/ Dissimilar Vivid Narrative Group.

Similar Vivid Narrative Group:

Please create a character (a person) very similar to who you are. Follow the instruction below (note that this character can be adorable, annoying or even evil; you will not be judged by the value of this character and your answer is anonymous):

1. What is the name of your character?
2. What is the gender of this character?
3. How old is your character?
4. Please describe what does the character look like.
5. What are the hobbies of this character?
6. Please describe the personality of your character.
7. Please give a detail description about the family/friends or any other close relationship of this character.
8. Please indicate what is the biggest achievement or problem he or she met so far.

Dissimilar Vivid Narrative Group:

Please create a character (a person) very dissimilar to who you are. Follow the instruction below (note that this character can be adorable, annoying or even evil; you will not be judged by the value of this character and your answer is anonymous):

1. What is the name of your character?
2. What is the gender of this character?
3. How old is your character?
4. Please describe what does the character look like.
5. What are the hobbies of this character?
6. Please describe the personality of your character.
7. Please give a detail description about the family/friends or any other close relationship of this character.
8. Please indicate what is the biggest achievement or problem he or she met so far.

Now, please write a short story about your character. It can be anything you feel remarkable and should be mentioned about this character or anything you feel important to shape the personality of this character. You can add some more detail to make the character you create as vivid and impressive as you can. Please note that your story can be positive, negative, happy, sad or even evil since you will not be judged by grammar, content or value. Please write the story in a format and style that feels best to you. Please write as much as you can for the next five minutes. The button to the next question WILL NOT APPEAR WITHIN 5 MINUTES.

Now, imagine that this person is in serious kidney failure and was just told by their doctor that he or she cannot survive for more than six months without a kidney transplant.

Please write a ***short story*** describing his or her story following the instructions below. You can also add some more details to make this story as vivid as you can. Please do not just answer those questions and put them together.

1. What does the patient and his/her family feel when they heard about this news?
2. How long did the character have to wait to receive their transplant?
3. Describe their experience of waiting for a transplant. What is this character planning to do, how do they feel, and why do they feel that way?
4. What is their reaction (the patient and the family) when they heard about a potential match?
5. What was the response of the potential donor and their family?

Please note that you will not be judged by grammar, content or value. Write the story in a format and style that feels best to you. Please write as much as you can for the next eight minutes. The button to the next question WILL NOT APPEAR WITHIN 8 MINUTES.

Writing for both Similar/Dissimilar Narrative Control Group.

Now, please write a short description about the room you are sitting in. It can be anything you observe or you feel. You can add some more detail to make your description as vivid and impressive as you can. Please note that your writing will not be judged by grammar, content, or value. Please write in a format and style that feels best to you. Please write as much as you can for the next five minutes. The button to the next question WILL NOT APPEAR WITHIN 5 MINUTES.

Similar Narrative Control Group

Now, imagine that there is a person who is very similar to who you are is in serious kidney failure and was just told by their doctor that he or she cannot survive for more than six months without a kidney transplant.

Please write a ***short story*** describing his or her story following the instructions below. You can also add some more details to make this story as vivid as you can. Please do not just answer those questions and put them together.

1. What does the patient and his/her family feel when they heard about this news?
2. How long did the character have to wait to receive their transplant?
3. Describe their experience of waiting for a transplant. What is this character planning to do, how do they feel, and why do they feel that way?
4. What is their reaction (the patient and the family) when they heard about a potential match?
5. What was the response of the potential donor and their family?

Please note that you will not be judged by grammar, content or value. Write the story in a format and style that feels best to you. Please write as much as you can for the next eight minutes. The button to the next question WILL NOT APPEAR WITHIN 8 MINUTES.

Dissimilar Narrative Control Group

Now, imagine that there is a person who is very dissimilar to who you are is in serious kidney failure and was just told by their doctor that he or she cannot survive for more than six months without a kidney transplant.

Please write a ***short story*** describing his or her story following the instructions below. You can also add some more details to make this story as vivid as you can. Please do not just answer those questions and put them together.

1. What does the patient and his/her family feel when they heard about this news?
2. How long did the character have to wait to receive their transplant?
3. Describe their experience of waiting for a transplant. What is this character planning to do, how do they feel, and why do they feel that way?
4. What is their reaction (the patient and the family) when they heard about a potential match?
5. What was the response of the potential donor and their family?

Please note that you will not be judged by grammar, content or value. Write the story in a format and style that feels best to you. Please write as much as you can for the next eight minutes. The button to the next question WILL NOT APPEAR WITHIN 8 MINUTES.

Now, please recall the character you create and answer the following questions. Please indicate how much you agree or disagree with the following statements. ("Strongly Disagree" (0) to "Strongly Agree" (100))

1. This character is very similar to who I am.
2. This character thinks like me.

3. This character perceives things like me.
4. This character behaves like me.
5. This character has a personality similar to me.
6. This character shares my beliefs.
7. This character shares my attitudes.
8. This character is very similar to some stage of me or who I used to be.
9. This character is very similar to a family member or a close friend who I loved.
10. This character is very similar to a person I dislike.
11. This character is who I wish to be.
12. This character is someone I never want to be.
13. I like the character I created.
14. I don’t like the character I created.