

The Effect of Perceived Social Support on Personal Strengths Following Minor Adversity:
An Experimental Investigation of Belonging Affirmation

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Supplemental Online Material

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(listed in the order in which participants completed them)

Loneliness Manipulation (Studies 1 and 2)
 Intelligence Manipulation (Study 3)
 Participants reported on their current feelings
 Social Support Manipulation (Belonging-Affirmation and Control Conditions)
 Participants again reported on their current feelings
 Humility – Acceptance of Fallibility Subscale (just Study 3)
 Connectedness Scale
 Perceived Social Support
 Gratitude
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 Self-Integrity
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Studies 1 and 2: Loneliness Manipulation

Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: content, triggers, functions. *Journal of Personality and Social Psychology, 91*(5), 975-993.

Zhou, X., Sedikides, C., Wildschut, T., & Gao, D. G. (2008). Counteracting loneliness: On the restorative function of nostalgia. *Psychological Science, 19*(10), 1023-1029.

Scale for Lonely Participants (7-point scale: Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree)

We are interested in how people feel about the relationships in their lives. Please answer the following questions.

1. I sometimes feel unhappy doing things alone.
2. I sometimes feel I have no one to talk to.
3. I sometimes feel I can't tolerate being alone.
4. I sometimes feel as if no one understands me.
5. I sometimes find myself waiting for people to call or write me back.
6. I sometimes feel completely alone.
7. I sometimes feel unable to reach out and communicate with those around me.
8. I sometimes feel starved for company.
9. I sometimes feel it is difficult to make new friends.
10. I sometimes feel excluded by others.

Next page:

You just took the California State University, East Bay Loneliness Scale [*original version said Southampton Loneliness Scale*]. It has been administered to a large number of people over the last five years. Based on the responses of over 1200 people, we have developed a way of scoring your answers. This allows us to provide you with valid and detailed feedback regarding your level of loneliness.

In 20 seconds, you will be able to click to the next screen to get your score.

Next page:

You were in the 62nd percentile of loneliness. This means that, compared with other people, you were above average on loneliness (you are relatively lonely).

Please explain your loneliness score. Why do you think you scored so high in loneliness? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.

Scale for “Not Lonely” Participants (7-point scale: Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree)

We are interested in how people feel about the relationships in their lives. Please answer the following questions.

1. I always feel unhappy doing things alone.
2. I always feel I have no one to talk to.
3. I always feel I cannot tolerate being alone.
4. I always feel like no one understands me.
5. I always find myself waiting for people to call or write me back.
6. I always feel completely alone.
7. I always feel unable to reach out and communicate with those around me.
8. I always feel starved for company
9. I always feel that it is difficult to make friends.
10. I always feel excluded by others.

Next page:

You just took the California State University, East Bay Loneliness Scale [*original scale said Southampton Loneliness Scale*]. It has been administered to a large number of people over the last five years. Based on the responses of over 1200 people, we have developed a way of scoring your answers. This allows us to provide you with valid and detailed feedback regarding your level of loneliness.

In 20 seconds, you will be able to click to the next screen to get your score.

Next page:

You were in the 12th percentile of loneliness. This means that, compared with other people, you were well below average in loneliness (you are not lonely).

Please explain your loneliness score. Why do you think you scored so low in loneliness? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.

Study 3 – Intelligence Manipulation

Puzzles came from:

Raven, J. C., Raven, J. C., & JH Court. (1996). *Standard Progressive Matrices: Sets A, B, C, D & E*. Oxford, England: Oxford Psychologists Press.

Authors wrote manipulation to mirror the loneliness manipulation in Studies 1 and 2.

We are interested in how well people can solve problems designed to measure intelligence. To assess this, we will be showing you 10 separate sets of pictures. In each set, one picture is missing. You need to select the picture that best completes the set given the pattern that is being represented. For example, review the below.

[example from Raven's Progressive Matrices]

In this example, number (2 for easier set and 7 for harder set) would be the correct answer because it correctly completes the pattern.

Important: You will have 20 seconds to answer each question. You can advance to the next question if you answer it in less than 20 seconds, but after 20 seconds have passed, the screen will advance even if you have not provided an answer.

Please read these instructions and look at the example carefully. You will be able to advance to the next screen after 30 seconds have passed to answer your first of 10 questions.

- Unintelligent condition saw 10 matrices, E3 through E12 (example was E1)
- Intelligent condition saw 10 matrices, B3 through B12 (example was B1)

After completing the 10 matrices: You just took the California State University, East Bay Intelligence Test. It has been administered to a large number of people over the last five years. Based on the responses of over 1200 people, we have developed a way of scoring your answers. This allows us to provide you with valid and feedback regarding your level of intelligence.

In 20 seconds, you will be able to click to the next screen to get your score.

Intelligent condition: You were in the 88th percentile of intelligence. This means that, compared with other people, you far above average on intelligence (you are relatively intelligent). **This percentile was meant to mirror the 12th percentile given to people in the not lonely condition in Studies 1 and 2.*

Please explain your intelligence score. Why do you think you scored so high in intelligence? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.

Unintelligent condition: You were in the 38th percentile of intelligence. This means that, compared with other people, you are below average on intelligence (you are less smart than most

others who have taken this test). *This percentile was meant to mirror the 62nd percentile score given to people in the lonely conditions from Studies 1 and 2.

Please explain your intelligence score. Why do you think you scored so low in intelligence? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.

We thought that 20 seconds would be more than enough time for those in the *intelligent* condition, but might add pressure to those in the *unintelligent* condition. Indeed, an average across the 10 problems indicated that those in the *intelligent* condition answered more quickly ($M = 9.58$ s, $SE = 0.19$) than those in the *unintelligent* condition ($M = 15.73$ s, $SE = 0.23$), $t(313) = 20.64$, $p < .001$. Those in the *unintelligent* condition were also more likely to have missing answers ($M = 2.32$, $SE = 0.13$) than those in the *intelligent* condition ($M = 0.49$, $SE = 0.05$), $t(203.03) = 12.82$, $p < .001$. Finally, those in the *unintelligent* condition were also less likely to provide a correct response ($M = 2.10$, $SE = 0.16$) than those in the *intelligent* condition ($M = 8.52$, $SE = 0.12$), $t(298.44) = 34.29$, $p < .001$.

State Affect

Instructions: Please answer the following questions about your feelings RIGHT NOW.

In Study 2, participants were asked this:

I am feeling lonely right now. (7-point scale, from strongly disagree to strongly agree)

At this moment, I feel quite lonely. (7-point scale, from Strongly disagree to Strongly agree)

In Study 3, participants were asked this:

I am feeling capable right now. (7-point scale, from strongly disagree to strongly agree)

At this moment, I feel quite capable. (7-point scale, from Strongly disagree to Strongly agree)

Instructions: We have a few more questions regarding your feelings.

Please use the scale below to describe how you feel RIGHT NOW. Select the degree to which you feel each of the following items. Do not spend too much time on any one item, but do read each item carefully.

Scale (7-point): Not at all, Very slightly, Somewhat, Moderately, Much, Very much, Extremely

Thankful

A desire to help others

Grateful

A desire to become a better person

Lonely

Optimistic about humanity

Appreciative

Worried/Anxious

Connected to my close friends

Sad

A sense of meaning in life

-Thankful, Appreciative, and Grateful made the state gratitude composite (Emmons & McCullough, 2003)

-"A desire to help others" "A desire to become a better person" and "Optimistic about humanity" are from Schnall, Roper, and Fessler (2010)'s elevation scale

Belonging Self-Affirmation

Shnabel, N., Purdie-Vaughns, V., Cook, J. E., Garcia, J., & Cohen, G. L. (2013). Demystifying values-affirmation interventions: Writing about social belonging is a key to buffering against identity threat. *Personality and Social Psychology Bulletin*, 39(5), 663-676.

What are your personal values?

Below is a list of characteristics and values, some of them may be important to you; some may be unimportant to you.

Please read through the list, then rank them in order of how important they are to you (“1” being the **MOST** important item, “10” being the **LEAST** important item). Type in your responses and use each number only once.

- _____ Being Good at Art
- _____ Creativity
- _____ Independence
- _____ Membership in a Social Group (such as your community, racial group, or school club)
- _____ Music
- _____ Politics
- _____ Relationships with Friends or Family
- _____ Religious Values
- _____ Sense of Humor
- _____ Sports Ability

Next Page:

Directions:

You rated “fill in” as your most important value.

Think about times when this value has made you feel closer and more connected with other people.

In the box below, please describe why this value has made you feel closer and more connected with other people.

Focus on your thoughts and feelings, and don’t worry about spelling, grammar, or how well-written it is.

Please spend at least a few minutes writing before moving on to the next page.

Next Page:

Again, think about the value you selected as your most important “fill in.” List the top TWO reasons why this value has made you feel closer and more connected with other people.

Please rate how much you agree or disagree with each of the below statements (6-point scale: *Strongly disagree, Disagree, Somewhat disagree, Somewhat agree, Agree, Strongly agree*)
This value has influenced my life.

This value is an important part of who I am.

For control task, participants rank the values just like the belonging affirmation participants, but then they see the following:

Directions:

You ranked “fill in” as your least important value.

Think about times when this value may have helped someone else feel closer and more connected with other people. (By “someone else,” I mean someone like another student at your school or a person you’ve heard about).

Describe why this value might help someone else feel closer and more connected with other people.

Focus on your thoughts and feelings, and don’t worry about spelling, grammar, or how well-written it is.

Please spend at least a few minutes writing before moving on to the next page.

Next page:

Again, think about the value you selected as your least important “fill in.” List the top TWO reasons why this value might make someone else feel closer and more connected with other people.

Please rate how much you agree or disagree with each of the below statements (6-point scale: *Strongly disagree, Disagree, Somewhat disagree, Somewhat agree, Agree, Strongly agree*).
This value has influenced some people.
This value is important to some people.

State Affect

Instructions: Please answer the following questions about your feelings RIGHT NOW.

In Study 2, participants were asked this:

I am feeling lonely right now. (7-point scale, from strongly disagree to strongly agree)

At this moment, I feel quite lonely. (7-point scale, from strongly disagree to strongly agree)

In Study 3, participants were asked this:

I am feeling capable right now (7-point scale, from strongly disagree to strongly agree)

At this moment, I feel quite capable. (7-point scale, from strongly disagree to strongly agree)

Instructions: We have a few more questions regarding your feelings.

Please use the scale below to describe how you feel RIGHT NOW. Select the degree to which you feel each of the following items. Do not spend too much time on any one item, but do read each item carefully.

Scale (7-point): Not at all, Very slightly, Somewhat, Moderately, Much, Very much, Extremely

Thankful

A desire to help others

Grateful

A desire to become a better person

Lonely

Optimistic about humanity

Appreciative

Worried/Anxious

Connected to my close friends

Sad

A sense of meaning in life

-Thankful, Appreciative, and Grateful made the state gratitude composite (Emmons & McCullough, 2003)

-"A desire to help others" "A desire to become a better person" and "Optimistic about humanity" are from Schnall, Roper, and Fessler (2010)'s elevation scale

Humility – Acceptance of Fallibility subscale (only in Study 3)

Brown, S. L., Chopra, P. K., & Schiraldi, G. R. (2013). Validation of the humility inventory (HI), a five-factor, self-report measure of humility. *The International Journal of Educational and Psychological Assessment*, 12, 57-77.

Instructions: Please indicate your level of agreement with each of the following statements. 7-point scale: Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree (original scale was 5-point)

It's OK if others aren't impressed with me.

I readily admit when I am wrong.

I appreciate learning of my weaknesses.

It's OK when others outperform me.

Connectedness (also sometimes called Relatedness; Subscale of the Balanced Measure of Psychological Needs)

Sheldon, K. M., & Hilpert, J. C. (2012). The balanced measure of psychological needs (BMPN) scale: An alternative domain general measure of need satisfaction. *Motivation and Emotion*, 36(4), 439-451.

*Adapted to be more state-like by adding "Right now" to all of the items and put the verb in present tense instead of past tense.

Instructions: Please read each of the following statements carefully and indicate how true each statement is of you.

5-point scale: Not at all true, A little true, Somewhat true, Mostly true, Extremely true; Original scale anchors were 1 = no agreement, 3 = Some agreement, 5 = much agreement, but we altered to better match the instructions.

1. Right now, I feel a sense of contact with people who care for me, and whom I care for.
2. Right now, I feel lonely.
3. Right now, I feel close and connected with other people who are important to me.
4. Right now, I feel unappreciated by one or more important people.
5. Right now, I feel a strong sense of intimacy with the people I spend time with.
6. Right now, I have disagreements or conflicts with people I usually get along with.

*Questions 2, 4, and 6 need to be reverse-scored before being averaged with the other items.

Perceived Social Support (Zimet et al., 1998)

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52(1), 30-41.

Instructions: Please indicate how much you agree with each of the following statements.
7-point scale: Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree

There is a special person who is around when I am in need
There is a special person with whom I can share my joys and sorrows
My family really tries to help me
I get the emotional help and support I need from my family
I have a special person who is a real source of comfort to me
My friends really try to help me
I can count on my friends when things go wrong
I can talk about my problems with my family
I have friends with whom I can share my joys and sorrows
There is a special person in my life who cares about my feelings
My family is willing to help me make decisions
I can talk about my problems with my friends

The Gratitude Questionnaire-Six Item Form (GQ-6)

McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: a conceptual and empirical topography. *Journal of Personality and Social Psychology*, 82, 112-127.

*Adapted to be more sensitive to current feelings. For example, original item” I have so much in life to be thankful for” was adapted to “Lately, I notice I have so much in life to be thankful for.

Instructions: Using the scale below as a guide, write a number beside each statement to indicate how much you agree with it.

Response scale: 7-point; 1=Strongly disagree, 7=Strongly agree

1. Lately, I notice that I have so much in life to be thankful for.
2. If I had to list everything that I felt grateful for over the past week, it would be a very long list.
3. When I look at the world, I don't see much to be grateful for lately.
4. I am grateful to a wide variety of people currently in my life.
5. Over the past week, I find myself more able to appreciate the people, events, and situations that have been part of my life history.
6. Lately, long amounts of time can go by before I feel grateful to something or someone.

*Questions 3 and 6 need to be reverse-scored before being combined with the other items. Ask me how to do this.

Humility – Systemic Perspective

Brown, S. L., Chopra, P. K., & Schiraldi, G. R. (2013). Validation of the humility inventory (HI), a five-factor, self-report measure of humility. *The International Journal of Educational and Psychological Assessment*, 12, 57-77.

Instructions: Please indicate your level of agreement with each of the following statements.

7-point scale: Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree (original scale was 5-point)

- I recognize I need help from other people.
- I need strength beyond my own.
- I find other's opinions are often quite good.
- I accept it that things don't always go my way.
- My way of doing things isn't always the best.
- I wouldn't do as well as I do without help from others.

Prosocial Behavior

Caprara, G. V., Steca, P., Zelli, A., & Capanna, C. (2005). A new scale for measuring adults' prosocialness. *European Journal of Psychological Assessment, 21*, 77-89.

Scoring: 5-point Likert scale from *almost never true* (coded as 1), *occasionally true* (coded as 2), *sometimes true* (coded as 3), *often true* (coded as 4), and *almost always true* (coded as 5). Rating scale slightly adapted from original.

- I am pleased to help my friends/colleagues in their activities
- I share the things that I have with my friends
- I try to help others
- I am available for volunteer activities to help those who are in need
- I am emphatic with those who are in need
- I help immediately those who are in need
- I do what I can to help others avoid getting into trouble
- I intensely feel what others feel
- I am willing to make my knowledge and abilities available to others
- I try to console those who are sad
- I easily lend money or other things
- I easily put myself in the shoes of those who are in discomfort
- I try to be close to and take care of those who are in need
- I easily share with friends any good opportunity that comes to me
- I spend time with those friends who feel lonely
- I immediately sense my friends' discomfort even when it is not directly communicated to me

Self-Integrity Scale

Sherman, D. K., Cohen, G. L., Nelson, L. D., Nussbaum, A. D., Bunyan, D. P., & Garcia, J. (2009). Affirmed yet unaware: exploring the role of awareness in the process of self-affirmation. *Journal of Personality and Social Psychology, 97*(5), 745-764.

Please indicate your agreement with the statements below by writing the appropriate number next to the statement using the following scale (1 = Strongly disagree, 7 = Strongly agree).

- _____ 1. I have the ability and skills to deal with whatever comes my way.
- _____ 2. I feel that I'm basically a moral person.
- _____ 3. On the whole, I am a capable person.
- _____ 4. I am a good person.
- _____ 5. When I think about the future, I'm confident that I can meet the challenges that I will face.
- _____ 6. I try to do the right thing.
- _____ 7. Even though there is always room for self-improvement, I feel a sense of completeness about who I fundamentally am.
- _____ 8. I am comfortable with who I am.

Humility – Other Esteem

Brown, S. L., Chopra, P. K., & Schiraldi, G. R. (2013). Validation of the humility inventory (HI), a five-factor, self-report measure of humility. *The International Journal of Educational and Psychological Assessment*, 12, 57-77.

Please indicate your level of agreement with each of the following statements.

7-point scale: Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree

One of my greatest joys is helping others excel.

I enjoy looking outside myself to the emotional needs of others.

I enjoy noticing unique talents in others.

I try to make others feel important.

I believe most people are capable of great things.

Final Questions

This last page of questions asks you to tell us a little more about yourself (your age, gender, etc.) and also to tell us what you thought the studies were about.

What did you think these studies were about? Please write your best guess. [write-in box]

Lastly, we would like to know more about you to put your responses into context. For example, do women answer these questions differently than men?

What is your age (in years)?

Drop down menu with 18 through 99 or older as options

What gender do you identify with?

Male

Female

I do not identify as either male or female

Prefer not to state

What is your ethnicity (please choose one)?

American Indian/Alaskan Native

Asian

Black/African American

Hawaiian/Pacific Islander

White

Hispanic/Latino

More than one (please list)

Other (please list)

Prefer not to state

Debriefing Statement (Studies 1 and 2)

Thank you for your participation today. We need to make one thing really clear. You did not take an actual, standardized loneliness scale. Instead, your scale was manipulated to either make you feel lonely (“I sometimes feel lonely”) or to make you feel less lonely (“I always feel lonely”). The percentile feedback we gave you was fake—we don’t actually know how lonely you might be compared to others.

Past research has shown that people made to feel lonely are more likely to engage in nostalgic thoughts and that nostalgic thoughts helps them restore their love and connection with other people. We wanted to explore whether other simple activities like expressing gratitude or talking about one’s values—like nostalgia—could also make people feel connected to others. The loneliness manipulation let us also explore whether these simple activities are restorative for people currently feeling lonely. Some of you were assigned to the control group in which you just recounted something about your life that was not expected to make you feel better. If you were in one of these conditions and are still feeling a bit low, try to focus your attention on the people in your life who have been there for you or on one specific instance in which someone did something for you for which you are extremely grateful. Past research has indicated that this thought exercise will make you feel better.

We know your friends or classmates might also be participating in this research, so we ask that you please keep the purpose of this study to yourself. This is VERY important to the success of the study.

Lastly, unfortunately, the results of this study will not be known for several months, but if you would like to receive a copy of the results once they are completed, you can email the researcher at [email redacted for anonymity].

Thank you for completing the study! Your participation has provided us valuable information.

Debriefing Statement (Study 3)

Thank you for your participation today. We need to make one thing really clear. You did not take an actual, standardized intelligence scale. Instead, you were randomly assigned to get really easy questions that would make you feel smart or much harder questions that might make you feel less smart. The percentile feedback we gave you was fake—we don't actually know how intelligent you might be compared to others.

Past research has shown that sometimes people who go through hard times might actually be better off afterward if they receive social support through the process. To this end, after the intelligence task, we randomly assigned you to either receive social support or not. Participants in the social support condition wrote about how their most important values made them feel closer and more connected to others, whereas people in the no social support condition wrote about how their least important value might help others feel closer and more connected to the people in their lives.

Our prediction was that people who experienced a blow to their ego (being told they were not smart), but had an opportunity to restore themselves via social support, would report the highest levels of connectedness to close others, gratitude, prosocial behavior, self-integrity and humility compared to the other groups. Thus, we predicted that hardship can help you grow under the right circumstances.

We know your friends or classmates might also be participating in this research, so we ask that you please keep the purpose of this study to yourself. This is VERY important to the success of the study.

Lastly, unfortunately, the results of this study will not be known for several months, but if you would like to receive a copy of the results once they are completed, you can email the researcher at [email redacted for anonymity].

Thank you for completing the study! Your participation has provided us valuable information.

Table 1

Descriptive Statistics and Contrast Tests for Study 1 on State Affect Items

	Experimental Conditions								<i>Growth Contrast</i>	<i>Buffering Contrast</i>	<i>Growth minus Buffering Contrast</i>
	Belonging-Affirmation				Control						
	Lonely		Not Lonely		Lonely		Not Lonely				
Dependent Variables	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>t</i> -contrast	<i>t</i> -contrast	<i>t</i> -contrast
A desire to help others	5.44 (0.27)	25	5.02 (0.25)	42	5.15 (0.25)	26	4.93 (0.20)	40	0.79	-0.08	1.42
A desire to become a better person	6.40 (0.16)	25	6.12 (0.19)	42	5.88 (0.28)	26	6.05 (0.12)	40	1.62	1.04	0.92
Lonely	2.68 (0.31)	25	2.05 (0.20)	42	2.92 (0.31)	26	2.03 (0.19)	40	0.59	2.22*	-2.60*
Optimistic about humanity	4.80 (0.30)	25	3.67 (0.28)	42	3.81 (0.27)	26	3.81 (0.27)	40	1.78 [†]	1.26	0.87
Worried/Anxious	2.72 (0.34)	25	2.69 (0.29)	42	3.96 (0.43)	26	2.83 (0.25)	40	2.43*	3.03**	-0.89
Connected to my close friends	5.40 (0.32)	24	5.12 (0.29)	42	4.08 (0.35)	26	5.63 (0.20)	40	2.46*	3.67***	-1.87 [†]
Sad	2.36 (0.31)	25	2.07 (0.23)	42	2.58 (0.33)	26	1.93 (0.18)	40	0.40	1.45	-1.67 [†]
A sense of meaning in life	5.54 (0.27)	24	5.12 (0.27)	42	4.81 (0.31)	26	4.90 (0.20)	40	1.84	1.15	1.19

Note: For all positive state affect items (A desire to help others, A desire to become a better person, Optimistic about humanity, Connected to my close friends, and A sense of meaning in life), the growth contrast includes the following contrast weights: *lonely/belonging-affirmation* (+3), *not lonely/belonging-affirmation* (+1), *lonely/control* (-3), *not lonely/control* (-1). The buffering contrast includes the following contrast weights: *lonely/belonging-affirmation* (+1), *not lonely/belonging-affirmation* (+1), *lonely/control* (-3), *not lonely/control* (+1). The growth minus buffering contrast tests the degree to which the growth contrast is a better fit to the data than the buffering contrast (*lonely/belonging-affirmation*: +0.66; *lonely/control*: +0.34; *not lonely/belonging-affirmation*: -0.11; *not lonely/control*: -0.89; see main manuscript for explanation of contrast calculation). For negative state affect items (Lonely, Worried/Anxious, and Sad) the signs on the contrast analyses were opposite so all contrast analyses could be interpreted in the same way (positive and significant *t*-contrasts indicate that the data support the prediction). A positive and significant *t*-contrast on the *Growth minus Buffering Contrast* indicates that the *Growth Contrast* is a better fit to the data than the *Buffering Contrast* (a negative *t*-contrast indicates the opposite). We found heterogeneity of variance across groups on “a desire to become a better person” and therefore used the *t*-contrast estimates that did not assume equal variances.

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$

Table 2

Descriptive Statistics and Contrast Tests for Study 2 on State Affect Items

	Experimental Conditions								<i>Growth Contrast</i>	<i>Buffering Contrast</i>	<i>Growth minus Buffering Contrast</i>
	Belonging-Affirmation				Control						
	Lonely		Not Lonely		Lonely		Not Lonely				
Dependent Variables	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>t</i> -contrast	<i>t</i> -contrast	<i>t</i> -contrast
A desire to help others	4.07 (0.25)	56	4.10 (0.20)	82	3.16 (0.26)	51	3.94 (0.21)	84	2.57*	3.01**	-0.75
A desire to become a better person	4.88 (0.22)	56	4.49 (0.19)	82	3.94 (0.27)	51	4.51 (0.20)	84	2.61*	2.47*	0.19
Lonely	2.64 (0.22)	46	1.35 (0.08)	82	2.98 (0.25)	51	1.37 (0.10)	84	1.02	4.52***	-7.30***
Optimistic about humanity	3.64 (0.22)	56	3.87 (0.18)	82	3.02 (0.20)	51	4.00 (0.21)	84	1.84 [†]	3.50**	-2.25*
Worried/Anxious	2.55 (0.21)	56	1.90 (0.17)	82	2.63 (0.20)	51	1.78 (0.14)	83	0.12	2.39*	-3.78***
Connected to my close friends	3.50 (0.22)	56	4.10 (0.21)	82	2.33 (0.20)	51	4.31 (0.21)	84	3.51**	6.93***	-4.74***
Sad	2.11 (0.18)	56	1.40 (0.10)	82	2.43 (0.23)	51	1.45 (0.10)	84	1.46	4.28***	-4.71***
A sense of meaning in life	4.18 (0.24)	56	4.45 (0.21)	82	2.96 (0.22)	51	4.49 (0.22)	84	3.28**	4.93***	-2.80**

Note: For all positive state affect items (A desire to help others, A desire to become a better person, Optimistic about humanity, Connected to my close friends, and A sense of meaning in life), the growth contrast includes the following contrast weights: *lonely/belonging-affirmation* (+3), *not lonely/belonging-affirmation* (+1), *lonely/control* (-3), *not lonely/control* (-1). The buffering contrast includes the following contrast weights: *lonely/belonging-affirmation* (+1), *not lonely/belonging-affirmation* (+1), *lonely/control* (-3), *not lonely/control* (+1). The growth minus buffering contrast tests the degree to which the growth contrast is a better fit to the data than the buffering contrast (*lonely/belonging-affirmation*: +0.66; *lonely/control*: +0.34; *not lonely/belonging-affirmation*: -0.11; *not lonely/control*: -0.89; see main manuscript for explanation of contrast calculation). For negative state affect items (Lonely, Worried/Anxious, and Sad) the signs on the contrast analyses were opposite so all contrast analyses could be interpreted in the same way (positive and significant *t*-contrasts indicate that the data support the prediction). A positive and significant *t*-contrast on the *Growth minus Buffering Contrast* indicates that the *Growth Contrast* is a better fit to the data than the *Buffering Contrast* (a negative *t*-contrast indicates the opposite). We found heterogeneity of variance across groups on Lonely, Optimistic about humanity, and Connected to my Close Friends and therefore used the *t*-contrast estimates that did not assume equal variances.

[†]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001

Table 3

Descriptive Statistics and Contrast Tests for Study 3 on State Affect Items

	Experimental Conditions								<i>Growth Contrast</i>	<i>Buffering Contrast</i>	<i>Growth minus Buffering Contrast</i>
	Belonging-Affirmation				Control						
	Unintelligent		Intelligent		Unintelligent		Intelligent				
Dependent Variables	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>M(SE)</i>	<i>n</i>	<i>t</i> -contrast	<i>t</i> -contrast	<i>t</i> -contrast
A desire to help others	5.15 (0.17)	80	5.28 (0.17)	79	4.55 (0.20)	78	5.23 (0.15)	78	2.39*	3.34**	-1.44
A desire to become a better person	5.70 (0.16)	80	5.82 (0.14)	79	5.24 (0.20)	78	5.94 (0.15)	78	1.60	2.65**	-2.10*
Lonely	2.75 (0.19)	80	2.65 (0.19)	79	2.72 (0.18)	78	2.88 (0.19)	78	0.17	-0.20	0.55
Optimistic about humanity	4.08 (0.18)	80	4.06 (0.18)	79	3.82 (0.19)	78	3.78 (0.17)	78	1.31	0.74	0.84
Worried/Anxious	2.84 (0.19)	80	2.91 (0.20)	79	3.36 (0.21)	78	3.38 (0.20)	78	2.28*	1.36	1.36
Connected to my close friends	4.69 (0.18)	80	4.68 (0.20)	79	4.21 (0.19)	78	4.68 (0.18)	78	1.71 [†]	2.17*	-0.71
Sad	2.61 (0.19)	80	2.34 (0.19)	79	2.35 (0.18)	78	2.59 (0.19)	78	-0.66	-0.77	0.19
A sense of meaning in life	4.65 (0.18)	80	5.09 (0.18)	79	4.44 (0.19)	78	4.62 (0.18)	78	1.39	1.67 [†]	-0.43

Note: For all positive state affect items (A desire to help others, A desire to become a better person, Optimistic about humanity, Connected to my close friends, and A sense of meaning in life), the growth contrast includes the following contrast weights: *unintelligent/belonging-affirmation* (+3), *intelligent/belonging-affirmation* (+1), *unintelligent/control* (-3), *intelligent/control* (-1). The buffering contrast includes the following contrast weights: *unintelligent/belonging-affirmation* (+1), *intelligent/belonging-affirmation* (+1), *unintelligent/control* (-3), *intelligent/control* (+1). The growth minus buffering contrast tests the degree to which the growth contrast is a better fit to the data than the buffering contrast (*unintelligent/belonging-affirmation*: +0.66; *unintelligent/control*: +0.34; *intelligent/belonging-affirmation*: -0.11; *intelligent/control*: -0.89; see text for explanation of contrast calculation). For negative state affect items (Lonely, Worried/Anxious, and Sad) the signs on the contrast analyses were opposite so all contrast analyses could be interpreted in the same way (positive and significant *t*-contrasts indicate that the data support the prediction). A positive and significant *t*-contrast on the *Growth minus Buffering Contrast* indicates that the *Growth Contrast* is a better fit to the data than the *Buffering Contrast* (a negative *t*-contrast indicates the opposite). We found heterogeneity of variance across groups on “A desire to become a better person” and therefore used the *t*-contrast estimates that did not assume equal variances.

[†]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001

Study 1 – Factorial ANOVA and Simple Effect Analyses for Primary Outcomes**ANOVA – State Gratitude**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Loneliness	1.877	1	1.877	1.238	0.268	0.009	0.010
Belonging	9.243	1	9.243	6.098	0.015	0.044	0.045
Loneliness * Belonging	2.121	1	2.121	1.399	0.239	0.010	0.011
Residual	195.539	129	1.516				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Loneliness * Belonging**

Loneliness	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	6.187	0.246	5.699	6.674
	Control	5.385	0.241	4.907	5.862
Not Lonely	Belong-Aff	5.683	0.190	5.307	6.058
	Control	5.400	0.195	5.015	5.785

Simple Main Effects - Belonging

Level of Loneliness	Sum of Squares	df	Mean Square	F	p
Lonely	8.199	1	8.199	5.409	0.022
Not Lonely	1.636	1	1.636	1.079	0.301

Study 1 Continued

ANOVA - Connectedness

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Loneliness	3.885	1	3.885	9.065	0.003	0.063	0.066
Belonging	0.873	1	0.873	2.037	0.156	0.014	0.016
Loneliness * Belonging	1.583	1	1.583	3.694	0.057	0.026	0.028
Residual	54.864	128	0.429				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Loneliness * Belonging

Loneliness	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	3.951	0.134	3.687	4.216
	Control	3.558	0.128	3.304	3.812
Not Lonely	Belong-Aff	4.079	0.101	3.879	4.279
	Control	4.138	0.104	3.933	4.342

Simple Main Effects - Belonging

Level of Loneliness	Sum of Squares	df	Mean Square	F	p
Lonely	1.934	1	1.934	4.513	0.036
Not Lonely	0.069	1	0.069	0.162	0.688

Study 1 Continued

ANOVA – Perceived Social Support

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Loneliness	1.917	1	1.917	1.632	0.204	0.012	0.012
Belonging	0.471	1	0.471	0.401	0.528	0.003	0.003
Loneliness * Belonging	5.893	1	5.893	5.016	0.027	0.037	0.037
Residual	151.556	129	1.175				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Loneliness * Belonging

Loneliness	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.773	0.217	5.344	6.202
	Control	5.218	0.213	4.797	5.639
Not Lonely	Belong-Aff	5.587	0.167	5.256	5.918
	Control	5.898	0.171	5.559	6.237

Simple Main Effects - Belonging

Level of Loneliness	Sum of Squares	df	Mean Square	F	p
Lonely	3.931	1	3.931	3.346	0.070
Not Lonely	1.977	1	1.977	1.683	0.197

Study 1 Continued

ANOVA – Gratitude (GQ-6)

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Loneliness	0.369	1	0.369	0.384	0.536	0.003	0.003
Belonging	1.144	1	1.144	1.191	0.277	0.009	0.009
Loneliness * Belonging	5.449	1	5.449	5.671	0.019	0.042	0.042
Residual	123.943	129	0.961				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Loneliness * Belonging

Loneliness	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.787	0.196	5.399	6.175
	Control	5.179	0.192	4.799	5.560
Not Lonely	Belong-Aff	5.262	0.151	4.963	5.561
	Control	5.487	0.155	5.181	5.794

Simple Main Effects - Belonging

Level of Loneliness	Sum of Squares	df	Mean Square	F	p
Lonely	4.699	1	4.699	4.890	0.029
Not Lonely	1.043	1	1.043	1.085	0.299

Study 1 Continued

ANOVA – Humility-Systemic Perspective

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Loneliness	0.386	1	0.386	0.496	0.482	0.004	0.004
Belonging	0.075	1	0.075	0.096	0.757	0.001	0.001
Loneliness * Belonging	8.333	1	8.333	10.715	0.001	0.077	0.077
Residual	99.548	128	0.778				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Loneliness * Belonging

Loneliness	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.375	0.180	5.019	5.731
	Control	4.808	0.173	4.465	5.150
Not Lonely	Belong-Aff	4.968	0.136	4.699	5.238
	Control	5.438	0.139	5.162	5.713

Simple Main Effects - Belonging

Level of Loneliness	Sum of Squares	df	Mean Square	F	p
Lonely	4.017	1	4.017	5.165	0.025
Not Lonely	4.511	1	4.511	5.801	0.017

Study 1 Continued

ANOVA – Prosocial Behavior

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Loneliness	0.237	1	0.237	0.532	0.467	0.004	0.004
Belonging	0.037	1	0.037	0.084	0.773	0.001	0.001
Loneliness * Belonging	0.021	1	0.021	0.047	0.829	0.000	0.000
Residual	57.492	129	0.446				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Loneliness * Belonging

Loneliness	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	3.877	0.134	3.613	4.142
	Control	3.817	0.131	3.558	4.076
Not Lonely	Belong-Aff	3.765	0.103	3.561	3.969
	Control	3.756	0.106	3.547	3.965

Simple Main Effects - Belonging

Level of Loneliness	Sum of Squares	df	Mean Square	F	p
Lonely	0.046	1	0.046	0.104	0.748
Not Lonely	0.002	1	0.002	0.003	0.953

Study 1 Continued**ANOVA – Self-Integrity**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Loneliness	0.025	1	0.025	0.042	0.838	0.000	0.000
Belonging	0.079	1	0.079	0.131	0.718	0.001	0.001
Loneliness * Belonging	0.690	1	0.690	1.147	0.286	0.009	0.009
Residual	76.933	128	0.601				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Loneliness * Belonging**

Loneliness	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.781	0.158	5.468	6.094
	Control	5.582	0.152	5.281	5.883
Not Lonely	Belong-Aff	5.661	0.120	5.424	5.897
	Control	5.759	0.123	5.517	6.002

Simple Main Effects - Belonging

Level of Loneliness	Sum of Squares	df	Mean Square	F	p
Lonely	0.497	1	0.497	0.827	0.365
Not Lonely	0.199	1	0.199	0.332	0.566

Study 2 – Factorial ANOVA and Simple Effect Analyses for Primary Outcomes**ANOVA – State Gratitude**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	47.11	1	47.113	16.277	< .001	0.053	0.057
Belonging	47.11	1	47.113	16.277	< .001	0.053	0.057
Lonely * Belonging	21.86	1	21.861	7.553	0.006	0.024	0.027
Residual	778.60	269	2.894				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Lonely * Belonging**

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	4.464	0.227	4.017	4.912
	Control	3.033	0.238	2.564	3.502
Not lonely	Belong-Aff	4.736	0.188	4.366	5.106
	Control	4.464	0.186	4.099	4.830

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	54.704	1	54.704	18.900	< .001
Not lonely	3.058	1	3.058	1.057	0.305

Study 2 Continued**ANOVA - Connectedness**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	31.293	1	31.293	49.709	< .001	0.151	0.156
Belonging	3.110	1	3.110	4.941	0.027	0.015	0.018
Lonely * Belonging	3.795	1	3.795	6.029	0.015	0.018	0.022
Residual	169.342	269	0.630				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Lonely * Belonging**

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	3.670	0.106	3.461	3.878
	Control	3.209	0.111	2.990	3.428
Not lonely	Belong-Aff	4.122	0.088	3.949	4.294
	Control	4.145	0.087	3.974	4.315

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	5.660	1	5.660	8.991	0.003
Not lonely	0.022	1	0.022	0.035	0.853

Study 2 Continued

ANOVA – Perceived Social Support

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	27.810	1	27.810	16.165	< .001	0.055	0.057
Belonging	5.221	1	5.221	3.035	0.083	0.010	0.011
Lonely * Belonging	7.501	1	7.501	4.360	0.038	0.015	0.016
Residual	462.763	269	1.720				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Lonely * Belonging

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.226	0.175	4.881	5.571
	Control	4.603	0.184	4.241	4.965
Not lonely	Belong-Aff	5.541	0.145	5.255	5.826
	Control	5.597	0.143	5.315	5.879

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	10.368	1	10.368	6.027	0.015
Not lonely	0.132	1	0.132	0.076	0.782

Study 2 Continued

ANOVA – Gratitude (GQ-6)

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	17.214	1	17.214	17.082	< .001	0.059	0.060
Belonging	1.045	1	1.045	1.037	0.309	0.004	0.004
Lonely * Belonging	2.140	1	2.140	2.123	0.146	0.007	0.008
Residual	271.085	269	1.008				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Lonely * Belonging

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	4.455	0.134	4.191	4.719
	Control	4.147	0.141	3.870	4.424
Not lonely	Belong-Aff	4.789	0.111	4.570	5.007
	Control	4.843	0.110	4.628	5.059

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	2.537	1	2.537	2.517	0.114
Not lonely	0.124	1	0.124	0.123	0.726

Study 2 Continued

ANOVA – Humility-Systemic Perspective

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	0.133	1	0.133	0.154	0.695	0.001	0.001
Belonging	2.228	1	2.228	2.566	0.110	0.009	0.009
Lonely * Belonging	1.098	1	1.098	1.265	0.262	0.005	0.005
Residual	233.523	269	0.868				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Lonely * Belonging

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.318	0.125	5.073	5.564
	Control	5.003	0.130	4.746	5.260
Not lonely	Belong-Aff	5.234	0.103	5.031	5.436
	Control	5.179	0.102	4.978	5.379

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	2.652	1	2.652	3.054	0.082
Not lonely	0.126	1	0.126	0.145	0.703

Study 2 Continued

ANOVA – Prosocial Behavior

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	2.860	1	2.860	4.090	0.044	0.015	0.015
Belonging	0.645	1	0.645	0.923	0.338	0.003	0.003
Lonely * Belonging	1.193	1	1.193	1.707	0.193	0.006	0.006
Residual	188.093	269	0.699				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Lonely * Belonging

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	3.451	0.112	3.231	3.671
	Control	3.216	0.117	2.985	3.446
Not lonely	Belong-Aff	3.525	0.092	3.343	3.707
	Control	3.561	0.091	3.381	3.741

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	1.477	1	1.477	2.112	0.147
Not lonely	0.053	1	0.053	0.076	0.783

Study 2 Continued**ANOVA – Self-Integrity**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	6.751	1	6.751	7.168	0.008	0.026	0.026
Belonging	1.238	1	1.238	1.315	0.253	0.005	0.005
Lonely * Belonging	3.461	1	3.461	3.675	0.056	0.013	0.014
Residual	252.410	268	0.942				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Lonely * Belonging**

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.683	0.130	5.428	5.938
	Control	5.314	0.136	5.046	5.581
Not lonely	Belong-Aff	5.775	0.108	5.562	5.987
	Control	5.868	0.106	5.659	6.076

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	3.640	1	3.640	3.865	0.050
Not lonely	0.356	1	0.356	0.378	0.539

Study 2 Continued**ANOVA – Humility-Other Esteem**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Lonely	3.786	1	3.786	2.233	0.136	0.008	0.008
Belonging	2.095	1	2.095	1.235	0.267	0.005	0.005
Lonely * Belonging	3.155	1	3.155	1.860	0.174	0.007	0.007
Residual	454.523	268	1.696				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Lonely * Belonging**

Lonely	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Lonely	Belong-Aff	5.036	0.174	4.693	5.378
	Control	4.635	0.182	4.276	4.994
Not lonely	Belong-Aff	5.057	0.145	4.772	5.342
	Control	5.098	0.142	4.818	5.377

Simple Main Effects - Belonging

Level of Lonely	Sum of Squares	df	Mean Square	F	p
Lonely	4.280	1	4.280	2.523	0.113
Not lonely	0.069	1	0.069	0.041	0.841

Study 3 – Factorial ANOVA and Simple Effect Analyses for Primary Outcomes**ANOVA – State Gratitude**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	21.31	1	21.306	9.768	0.002	0.029	0.030
Belonging	12.34	1	12.336	5.656	0.018	0.017	0.018
Intelligence * Belonging	18.45	1	18.453	8.460	0.004	0.025	0.026
Residual	678.39	311	2.181				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Intelligence * Belonging**

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	5.553	0.166	5.226	5.880
	Control	5.641	0.167	5.312	5.970
Unintelligent	Belong-Aff	5.517	0.165	5.192	5.842
	Control	4.637	0.167	4.308	4.966

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	0.306	1	0.306	0.140	0.708
Unintelligent	30.578	1	30.578	14.018	< .001

Study 3 Continued

ANOVA - Connectedness

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	0.028	1	0.028	0.051	0.822	0.000	0.000
Belonging	2.352	1	2.352	4.233	0.040	0.013	0.013
Intelligence * Belonging	0.042	1	0.042	0.076	0.782	0.000	0.000
Residual	172.846	311	0.556				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Intelligence * Belonging**

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	3.873	0.084	3.708	4.038
	Control	3.677	0.084	3.511	3.843
Unintelligent	Belong-Aff	3.831	0.083	3.667	3.995
	Control	3.682	0.084	3.516	3.848

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	1.509	1	1.509	2.715	0.100
Unintelligent	0.884	1	0.884	1.591	0.208

Study 3 Continued**ANOVA – Perceived Social Support**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	0.029	1	0.029	0.026	0.873	0.000	0.000
Belonging	5.000	1	5.000	4.382	0.037	0.014	0.014
Intelligence * Belonging	0.036	1	0.036	0.032	0.859	0.000	0.000
Residual	354.897	311	1.141				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Intelligence * Belonging**

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	5.673	0.120	5.437	5.909
	Control	5.400	0.121	5.162	5.638
Unintelligent	Belong-Aff	5.632	0.119	5.397	5.867
	Control	5.402	0.121	5.164	5.640

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	2.934	1	2.934	2.571	0.110
Unintelligent	2.100	1	2.100	1.840	0.176

Study 3 Continued

ANOVA – Gratitude (GQ-6)

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	1.324	1	1.324	1.293	0.256	0.004	0.004
Belonging	0.860	1	0.860	0.840	0.360	0.003	0.003
Intelligence * Belonging	1.223	1	1.223	1.194	0.275	0.004	0.004
Residual	318.460	311	1.024				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Intelligence * Belonging

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	5.403	0.114	5.179	5.627
	Control	5.423	0.115	5.198	5.649
Unintelligent	Belong-Aff	5.398	0.113	5.175	5.621
	Control	5.169	0.115	4.943	5.394

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	0.016	1	0.016	0.016	0.901
Unintelligent	2.073	1	2.073	2.025	0.156

Study 3 Continued**ANOVA – Humility-Systemic Perspective**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	0.970	1	0.970	1.374	0.242	0.004	0.004
Belonging	0.041	1	0.041	0.058	0.810	0.000	0.000
Intelligence * Belonging	0.131	1	0.131	0.185	0.667	0.001	0.001
Residual	219.555	311	0.706				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Intelligence * Belonging**

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	5.287	0.095	5.101	5.473
	Control	5.350	0.095	5.163	5.538
Unintelligent	Belong-Aff	5.217	0.094	5.032	5.402
	Control	5.199	0.095	5.012	5.386

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	0.158	1	0.158	0.224	0.636
Unintelligent	0.013	1	0.013	0.018	0.893

Study 3 Continued**ANOVA – Prosocial Behavior**

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	1.051	1	1.051	2.300	0.130	0.007	0.007
Belonging	0.914	1	0.914	2.000	0.158	0.006	0.006
Intelligence * Belonging	1.280	1	1.280	2.801	0.095	0.009	0.009
Residual	142.109	311	0.457				

Note. Type III Sum of Squares

Marginal Means**Marginal Means - Intelligence * Belonging**

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	3.917	0.076	3.767	4.067
	Control	3.937	0.077	3.786	4.087
Unintelligent	Belong-Aff	3.929	0.076	3.780	4.078
	Control	3.694	0.077	3.543	3.844

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	0.015	1	0.015	0.034	0.855
Unintelligent	2.185	1	2.185	4.782	0.029

Study 3 Continued

ANOVA – Self-Integrity

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	0.405	1	0.405	0.598	0.440	0.002	0.002
Belonging	2.630	1	2.630	3.887	0.050	0.012	0.012
Intelligence * Belonging	0.296	1	0.296	0.438	0.509	0.001	0.001
Residual	210.422	311	0.677				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Intelligence * Belonging

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	5.742	0.093	5.560	5.924
	Control	5.620	0.093	5.437	5.803
Unintelligent	Belong-Aff	5.731	0.092	5.550	5.912
	Control	5.487	0.093	5.304	5.670

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	0.579	1	0.579	0.856	0.356
Unintelligent	2.353	1	2.353	3.477	0.063

Study 3 Continued

ANOVA – Humility-Other Esteem

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p
Intelligence	0.007	1	0.007	0.010	0.919	0.000	0.000
Belonging	0.018	1	0.018	0.028	0.867	0.000	0.000
Intelligence * Belonging	0.658	1	0.658	0.995	0.319	0.003	0.003
Residual	205.744	311	0.662				

Note. Type III Sum of Squares

Marginal Means

Marginal Means - Intelligence * Belonging

Intelligence	Belonging	Marginal Mean	SE	Lower CI	Upper CI
Intelligent	Belong-Aff	5.737	0.092	5.557	5.917
	Control	5.813	0.092	5.632	5.994
Unintelligent	Belong-Aff	5.838	0.091	5.659	6.016
	Control	5.731	0.092	5.550	5.912

Simple Main Effects - Belonging

Level of Intelligence	Sum of Squares	df	Mean Square	F	p
Intelligent	0.227	1	0.227	0.344	0.558
Unintelligent	0.450	1	0.450	0.680	0.410

Figure 1

Means and Standard Errors by Condition for Primary Outcomes in Study 1.

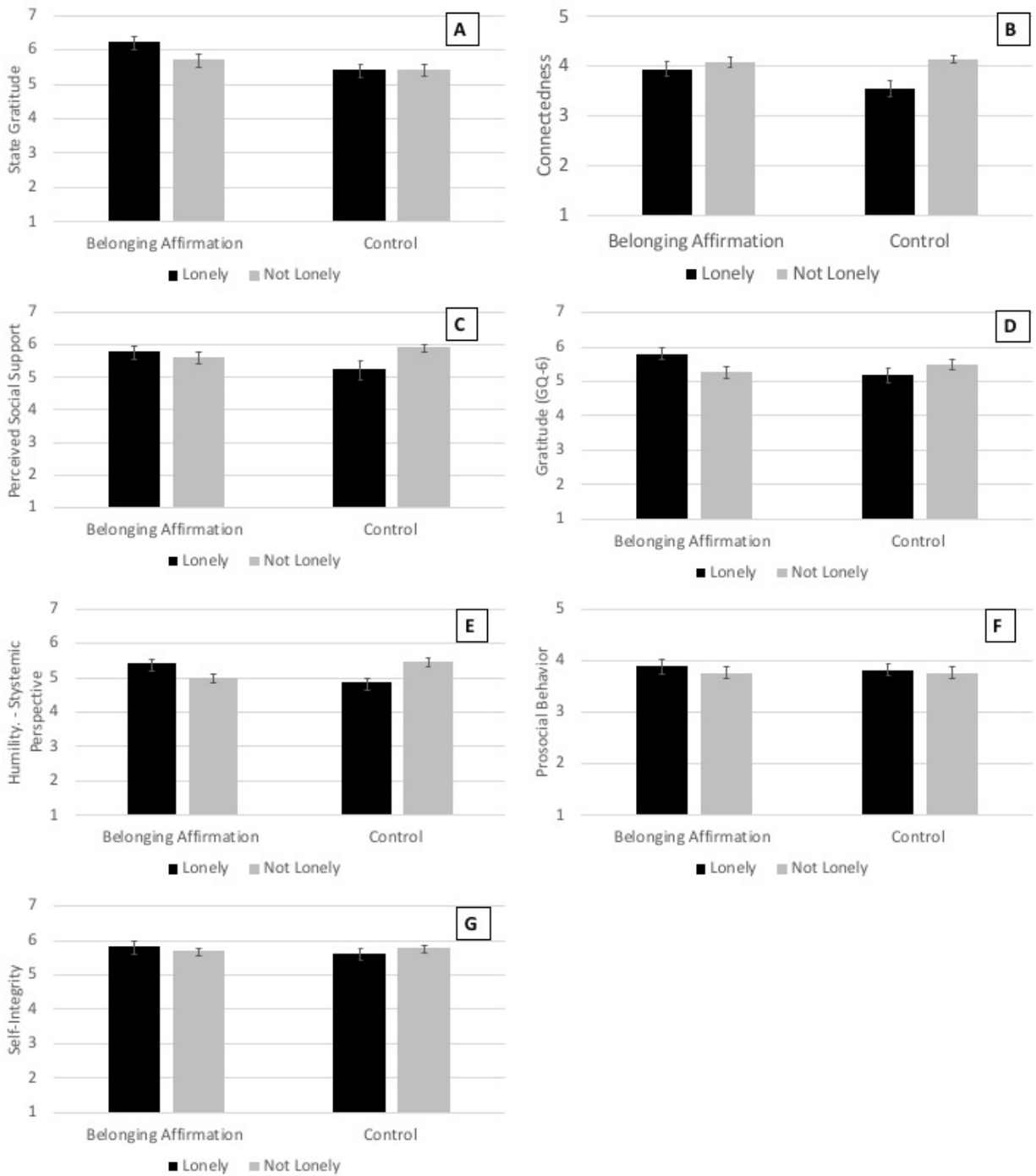


Figure 2

Means and Standard Errors by Condition for Primary Outcomes in Study 2

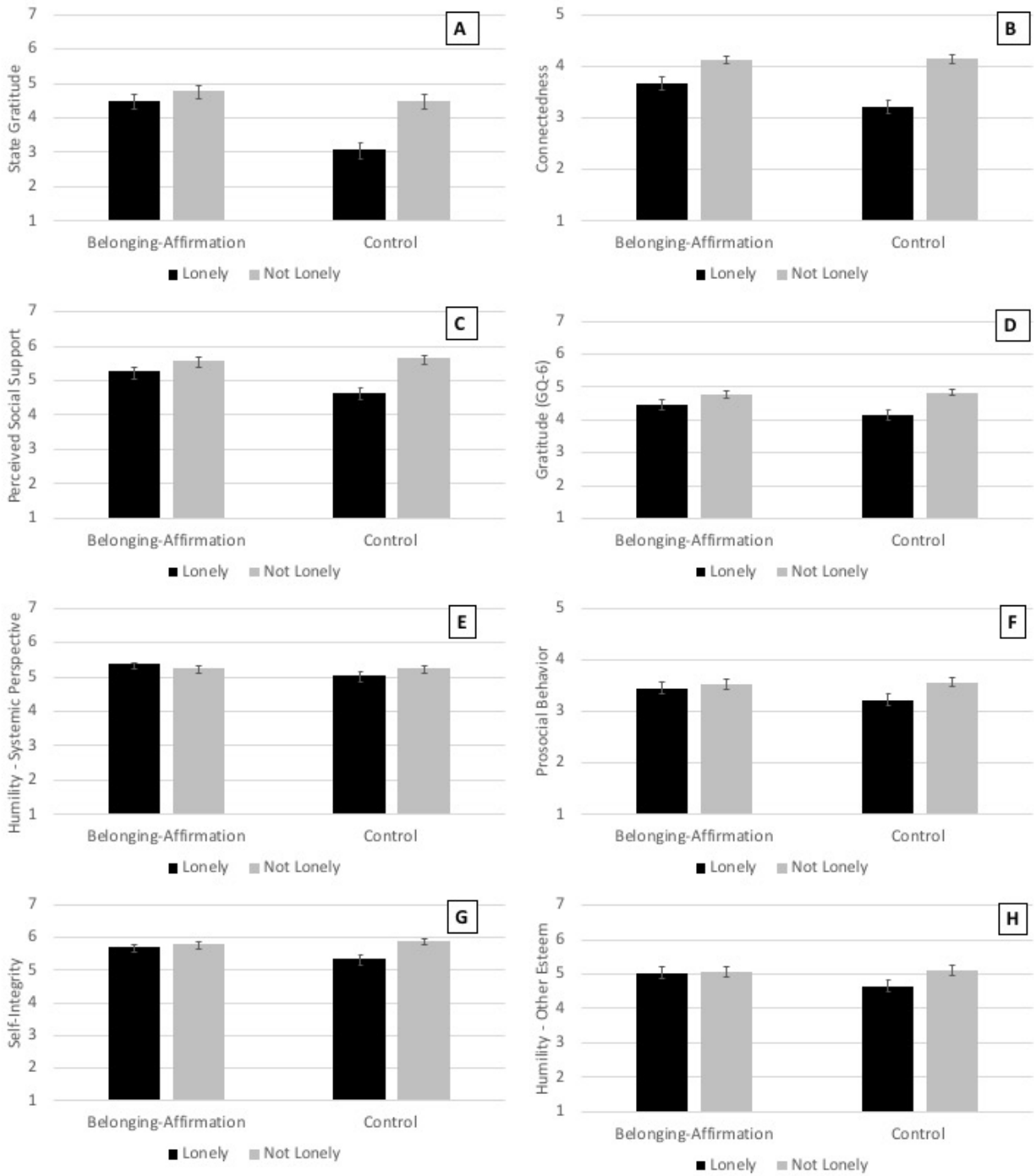


Figure 3

Means and Standard Errors by Condition for Primary Outcomes in Study 3

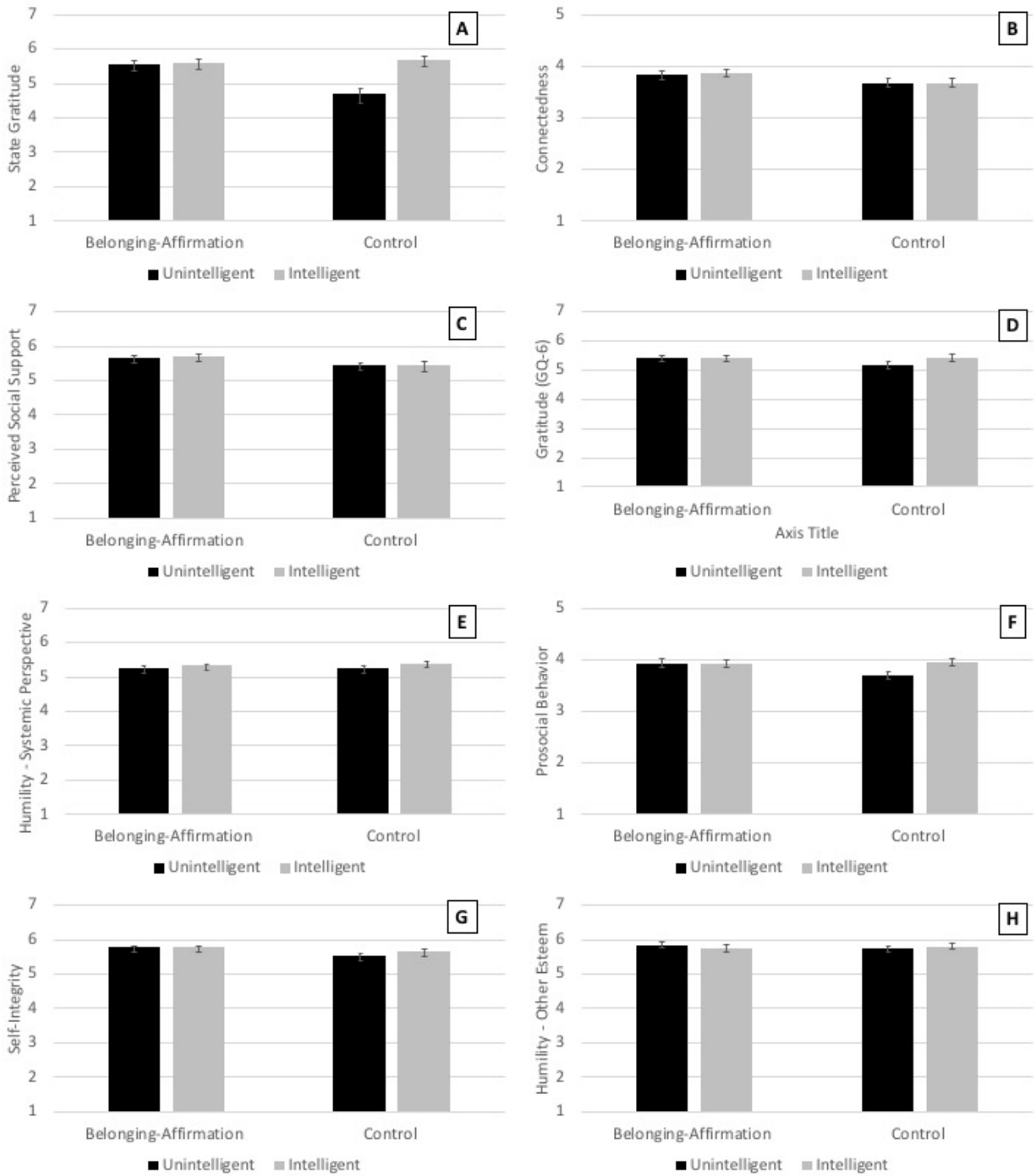


Table 4

Sample Participant Reactions to the Loneliness Manipulation in Study 1

Participants in *lonely* condition responded to this:

“Please explain your loneliness score. Why do you think you scored so high in loneliness? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.”

Participants in the *not lonely* condition responded to this:

“Please explain your loneliness score. Why do you think you scored so low in loneliness? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.”

Coders were instructed to mark participants as "not following instructions" if they did not believe the manipulation or misinterpreted the percentile.

Responses appear as written by the participants.

	<i>Lonely</i> condition	<i>Not Lonely</i> condition
Followed instructions (agreement between coders)	<p>“I assume it is because i usually talk to my brothers about things or my family in that matter and now that they live farther away i can't depend on them.”</p> <p>“Sometimes I am overworked and spend much time alone. Also I haven't been in a relationship in a long time and I think that may contribute. There seem to be some things that family and friend relationships do not suffice for.”</p> <p>“Because I do have tendencies to feel left out or rejected by people who mean a lot to me for some reason”</p>	<p>“I think my score in loneliness is slow because I am part of a swim team here at East Bay and I gained 20+ friends. Ever since I got to college, I have been more open and honest about myself and reaching out to more people than in high school.”</p> <p>“I think I scored so low in loneliness because I am a pretty well rounded person. I do not find it hard to talk to or meet new people. I also have a good group of friends that keep me company at school and outside of school.”</p> <p>“I feel like I scored low because I'm a pretty open and friendly guy. I'm usually always around people talking to them or doing activities. I also hate the feeling of being alone so I try to avoid it as much as possible.”</p>

	<i>Lonely condition</i>	<i>Not Lonely condition</i>
Did not follow instructions (agreement between coders)	<p><u>Did not believe score</u></p> <p>“Well i am not sure why my score is so high, i am not lonely at all. i am always with my boyfriend, friends and family.”</p> <p>“I have no idea why I scored so high in the loneliness section of the questionnaire. In real life, I don't feel too lonely because there are always people I can talk to whenever I want to.”</p> <p>“I do not think this is accurate at all if anything im probably to social.”</p> <p><u>Misunderstood percentile</u></p> <p>“I think my score is high, because I just like to be around people. For example I would rather go eat lunch with a group of friends than to be by myself. Or hang out with people instead of sit at home and watch netflix. I don't lack attention or feel like no one is there for me.”</p> <p>“I scored high on my loneliness test because I have been involved on campus and joined a fraternity that has brought me a lot of friendships and great brotherhood. I always have someone to reach out to.”</p> <p>“I think it's because I'm usually a very social person and I enjoy spending my time with friends or getting to know people I recently met. I'm not really afraid to put myself out there if I want attention or company so that's probably why. .. And my friends are awesome :)”</p>	<p><u>Did not believe score:</u></p> <p>“I dont actully know i wasnt expecting that score.”</p> <p>“My current mood.”</p> <p>“Some days are bad days and some days are good days. I cannot base this survey on my bad days or my good days alone. I don't always feel lonely but sometimes I do.”</p> <p><u>Misunderstood percentile</u></p> <p>“I feel that even though I am surrounded by people that I love and know care about me, I still feel alone.”</p> <p>“I don't really think that I am lonely.”</p> <p>“i feel that i might have scored below average because i might not have that many friends and i find it hard to make new ones”</p> <p>“I dont have many friends that I can share my concerns or pathway.”</p>

Table 5

Sample Participant Reactions to the Loneliness Manipulation in Study 2

Participants in *lonely* condition responded to this:

“Please explain your loneliness score. Why do you think you scored so high in loneliness? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.”

Participants in the *not lonely* condition responded to this:

“Please explain your loneliness score. Why do you think you scored so low in loneliness? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.”

Coders were instructed to mark participants as "not following instructions" if they did not believe the manipulation or misinterpreted the percentile.

Responses appear as written by the participants.

	<i>Lonely</i> condition	<i>Not Lonely</i> condition
Followed instructions (agreement between coders)	<p>“I have a hard time making new friends. I'm naturally an introvert, and I don't seek out opportunities to be around other people. Although I like having friends, being in social situations can sometimes be stressful.”</p> <p>“I think I scored somewhat high because I tend to withdraw from people even if it makes me feel lonely. I tend to be awkward and find social situations uncomfortable which further isolates me from others. I usually don't share my feelings with people so don't make many connections.”</p> <p>“I am alone most of the time and I don't really have many friends. While I have friends online that isn't the same obviously. I am mostly okay with things but I guess I'm a bit lonely.”</p>	<p>“I think I scored low because I have many friends. I have people that care about me. I am always one that likes to go out.”</p> <p>“I think my level of loneliness is low because I have a lot of friends and family. There is always someone available to me whenever I need.”</p> <p>“Probably because I'm not lonely. I am around people all day, some nights and most weekends. I have a few good friends, a lot of work friends and nearby family. I frequently envy so-called lonely people”</p> <p>“I have small children. I can not even pee alone.”</p>

	<i>Lonely condition</i>	<i>Not Lonely condition</i>
Did not follow instructions (agreement between coders)	<p><u>Did not believe score</u></p> <p>“I disagree with this score. I'm pretty happy being alone overall and can go days without talking to anyone and be perfectly fine with it. I cherish the time I spend with my friends but don't need or want their presence all the time.”</p> <p>“I don't feel lonely, therefore I'm not sure why the score indicates that I'm lonely. I have many people in my household, and I have so many great friends and coworkers.”</p> <p>“Im having hard time believing i scored that high considering im not lonely and i choose answers to reflect that. If im considered lonely, then there are a lot of people lonely. I dont believe it.”</p> <p>“I don't really believe this. I didn't click on about how lonely I was except for one question.”</p> <p><u>Misunderstood Percentile</u></p> <p>“I think it is because I have a lot of people around me that I can count upon. I have many friends, and I have my family. When you have a two year old, you are never truly alone. I have never been one that minded being by myself, so things that may bother other people, do not bother me at all. I can go long periods of time and not talk to anyone, it has not bothered me to do so in the past.”</p> <p>“i am not that lonely compared to other people”</p>	<p><u>Did not believe score</u></p> <p>“First off, I will say, I don't really believe that assessment. However, if it were to be true, I would attribute it to the fact that I don't really have a high need for companionship and acceptance in the first place. Even in situations when one might expect me to be lonely, I don't feel that way, because I am used to feeling independent and aloof from others.”</p> <p>“I think its either because you manipulated the score as part of your pyschobabble learning crap or its because I hate people and I dont want them around me to begin with. Solitude is the best way to live life.”</p> <p>“honestly im not sure, i do feel lonely a lot but not as much as others i guess? im not very sure about these results being real”</p> <p>“The score is fake. I spend almost all of my time alone. I am alone in the world.”</p> <p><u>Misunderstood Percentile</u></p> <p>“I've always been a bit of a loner and never had any truly close friends.”</p> <p>“I don't have a lot of friends.”</p> <p>“Perhaps it is because I do not make time for others as I should. I do have many friends but I mostly choose to isolate myself out of habit. I have a very demanding job that takes a lot out of me which causes me to be a bit introverted I suppose. Maybe it is because I am not an attention grabber and kind of exist in the background.”</p>

Table 6

Sample Participant Reactions to the Intelligence Manipulation in Study 3

People in *intelligent* condition responded to this:

Please explain your intelligence score. Why do you think you scored so high in intelligence? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.

People in the *unintelligent* condition responded to this:

Please explain your intelligence score. Why do you think you scored so low in intelligence? Say whatever comes to mind and don't worry about your spelling or grammar. Please remember your responses are completely confidential.

Coders were instructed to mark participants as "not following instructions" if they did not believe the manipulation or misinterpreted the percentile.

Responses appear as written by the participants.

	<i>Unintelligent</i> condition	<i>Intelligent</i> condition
Followed Instructions (agreement among coders)	<p>“I think that I may have scored high because I somewhat took my time answering the questions.”</p> <p>“Ive always been very good at art and math so when it came to patterns i was able to identify the one that followed quite quickly.”</p> <p>“The pictures were just tests to see if we could follow the patterns of the shapes. Once i figured what the pattern was or what it was not it was easy to choose an answer.”</p>	<p>“I think I scored low due to not having enough time to completely scan and process what was being shown on the screen.”</p> <p>“For some of the questions I did not have enough time to figure out a pattern some of them I could see right away but others took some time.”</p> <p>“I think I scored so low in intelligence because I have trouble identifying patterns and also I am tired right now so that definitely affected my skills.”</p>

	<i>Intelligent condition</i>	<i>Unintelligent condition</i>
Did not follow Instructions (agreement among coders)	<p>“I do not think that this prove my intelligence because I was just mirroring the shapes with the opposite side. I think that I scored high because it I was assuming that was the correct answer because it looked completed.”</p> <p>“I personally don't believe that someones intelligence can be measured by a test. What does it truly mean to be intelligent? I think that I got this score because I am more visual when it comes to anything. It's easy for me to put pieces of a puzzle together.”</p> <p>“I don't feel this test was difficult enough to determine intellignce i feel that it was very easy and many people could have done well. I think i should have done better but I am somewhat tired and I didn't know it was timed so I didn't try as hard.”</p>	<p>“My level of intelligence cannot to be determined based of one test which only examines the identification of shapes that indicates one's overall knowledge”.</p> <p>“I do not believe that my score yields low in intelligence. If so, other aspects should come into play and the persons should not only be tested with visuals. People have a different capacity and style of portraying their "intelligence" not one single test can brand a person as below average, the human being is much more complex than that.”</p> <p>“It was rushed and time and i don't think intelligence should be measured based on speed but getting the problem right. I don't believe this is a right measurement of my intelligence”</p>
Disagreement among coders	<p>“I think i scored high because the test was easy. i do not quite trust the test because i know this is a experiment.”</p> <p>“well, it doesnt really take much intelligence.. even a 10 year old could have done that”</p> <p>“This is because these were easy, matching, common sense questions. Not many people have that”</p> <p>“I feel as though the task that was asked of me to complete was pretty standard and self explanatory if you completed thoroughly”</p>	<p>“I think I scored low because I was not completely understanding what the questions were asking. It is also really early in the morning so looking at patterns on a screen really do not interest me all that much.”</p> <p>“I'm honestly just really tired and sleepy. I have been studying for a midterm till 4am and after the first one went faster I was just so confused on what it asked.”</p> <p>“I believe I scored low because I did not quite understand this test. It didn't make sense to me and therefore I just made educated guesses.”</p>