Unconscious Emotion: Comparing the Happiness Levels of Danes and Americans

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Abstract

Denmark consistently ranks as one of the happiest countries in the world. However, its rates of suicide and antidepressant prescriptions are similar to those of the United States. Therefore, this study aimed to compare the implicit and explicit levels of happiness in Americans and Danes. We measured implicit (or unconscious) happiness in a task by having participants assign positive or negative attributes to neutral face expressions. Explicit, or conscious, levels of happiness were obtained through the Oxford Happiness Questionnaire. Contrary to our hypotheses, our results showed that Danes and Americans report similar levels of explicit happiness, while Danes demonstrated higher levels of unconscious happiness. Overall, we found that Danes might be implicitly happier than Americans, and we suggest further avenues of research based on this finding.

Keywords: Unconscious emotion, implicit happiness, explicit happiness, cultural differences

Unconscious Emotion: Comparing the Happiness Levels of Danes and Americans

Denmark ranks as one of the happiest countries in the world by the World Happiness Index. As of 2018, Denmark ranked as the third happiest country in the world. Meanwhile, the United States consistently ranks much lower, coming in at 18th in the world (Helliwell et al., 2018). However, journalist Michael Booth suggested happiness index doesn't measure true happiness, instead only measuring contentment with life (*Are Danes Really That Happy,* 2015). In fact, Denmark and the United States have nearly equal suicide rates, and Denmark prescribes antidepressants at almost an equal rate to the United States (World Health Organization, 2017).

Americans and Danes clearly differ in terms of macro-level, explicit happiness; however, their individual, subjective experience of happiness might not so different. Considering the statistics on high rates of antidepressant prescriptions and suicide in Denmark, Danes might report higher levels of happiness while still experiencing fairly standard levels of unconscious happiness. For example, according to Walker & Schimmak (2008), when individuals report their subjective well-being and explicit happiness, it tends to correlate only moderately with implicit measures. These findings suggest that subjective well-being might not necessarily be representative of unconscious happiness. Additionally, in a meta-analysis, Braunstein et al. (2017) found that implicit emotional processes and explicit emotional processes take place in different brain regions. While explicit emotional processes are often attributed to the ventromedial prefrontal cortex, implicit emotional processes take place in the lateral and posterior regions of the prefrontal cortex.

Previous literature has also found that facial emotion recognition can indicate an individual's implicit emotional state. For example, Penton-Voak et al. (2013) found that individuals who are trained to assign positive emotions to neutral faces display lowered aggression and anger. Additionally, Sabino et al. (2018) found that musicians with higher levels of performance anxiety had decreased face emotion recognition ability compared with musicians with lower levels of performance anxiety. This indicates that recognition of facial happiness might be impaired by more negative emotional states.

According to previous research, there are measurable psychological and physiological differences in explicit and implicit happiness. Considering this, we predicted that we would see a

difference in an individual's explicitly reported happiness and implicitly demonstrated happiness. Furthermore, considering the discrepancy between Danish individual-level happiness and macro-level contentment, we predicted that we would observe a cultural difference between Danes and Americans. Specifically, we predicted that Americans would show a small difference between implicit and explicit levels of happiness, while Danes would show a bigger difference between implicit and explicit levels of happiness.

Methods

Participants

We recruited twenty participants from Danish Institute of Study Abroad: Copenhagen and the surrounding community. Fifteen were female, and five were male. The entire sample identified as White, as well as being a student. Six participants were Danish, and 14 were American. All participants spoke English. Compensation included entry into a movie ticket raffle.

Procedure

Participants were scheduled for 15-minute sessions with at least one researcher present. All participants were given a general outline of the study's task along with a consent form. This study utilized an E-Prime task, completed in a dark, quiet room. Participants completed the Oxford Happiness Inventory following the E-Prime task. Once participants finished the experiment, we obtained their email addresses to enter them into a raffle. Their email addresses were not attached to their participant number to retain anonymity. They were debriefed and dismissed.

E-Prime Task

The E-Prime task had two sections: the implicit happiness measure and a working memory distraction task. The images and questions associated with each section were randomized and integrated into one block. We used 80 different images of white faces, to avoid any potential racial biases. We used 40 of these faces for the implicit happiness measure task, and the other 40 for the working memory distraction task. The Chicago Face Database provided all the images. Half of the faces were male, the other half female. We gray-scaled all of the faces

and displayed them for 55.2 ms. A mask followed each face, lasting for 500 milliseconds Prior to the real trial, every participant took place in a practice trial and were shown three faces, followed by questions similar to ones asked in the real trial.

Implicit Happiness Measure Task

Out of the 40 faces used for this section of the E-Prime task, 20 had neutral expressions, 10 had sad or angry expressions, and 10 had happy expressions. A question followed each image. For this section, each question asked the participants to assign a positive or negative attribute to the face. Participants selected the answers from the bottom of the computer screen, placed on the right and left sides of the screen. Participants selected the "F" key when choosing the answer on the left of the screen, and the "J" key when picking the answer on the right of the screen. For example, following an image of a sad face, participants were asked "Did this person have a good day or bad day?" Participants selected "F" for "bad day" or "J" for "good day." We randomized the presentation of the words and phrases so that positive and negative phrases or words could appear on either the left or right side of the screen. For example, "F" could refer to "bad day" in response to one question, and "good day" to another. We also randomized the wording of the questions. For example, the question in the first example could also appear as "Did this person have a bad day or good day?"

Working Memory Distraction Task

This task also had 20 neutral faces, 10 sad, and 10 happy, presented randomly. Questions followed only half of the faces in this task. The 20 faces in the working memory distraction task asked about specific features of the faces. For example, participants were asked "What gender was the face?"

Questionnaires

After participants completed the E-Prime task, we gave them two questionnaires. We used a Google Form that included demographic questions and the Oxford Happiness Questionnaire (Hills & Argyle, 2002). Our demographic questionnaire included questions regarding gender, age, race and/or ethnicity, country of origin, employment status, and language background. The Oxford Happiness Questionnaire had 29 statements about happiness (see Appendix). The participants scored every statement on a range of one to six. One referred to

strongly disagree, and six referred to strongly agree. 12 questions were negative statements about happiness and were reverse scored. After finishing the questionnaire on the Google Form, participants completed the Edinburgh Handedness Inventory, which measures their ability to use their left and right hands.

Results

We found significant differences between Danes and Americans; however, these differences had an opposite effect than what was predicted. When we performed a one-way analysis of variance, we found that Americans and Danes showed no difference in their Cambridge Happiness Inventory scores (F (6,14)=.005, p=.975). Both groups clustered around the Cambridge Happiness Inventory world average of 4.3 with means of 4.32 and 4.29, respectively. However, the ANOVA also showed a significant difference between implicit happiness for Americans versus Danes (*Figure 1*). We found that Danes coded significantly more neutral faces as positive than Americans (F (6,14)=6.85, p=.017).

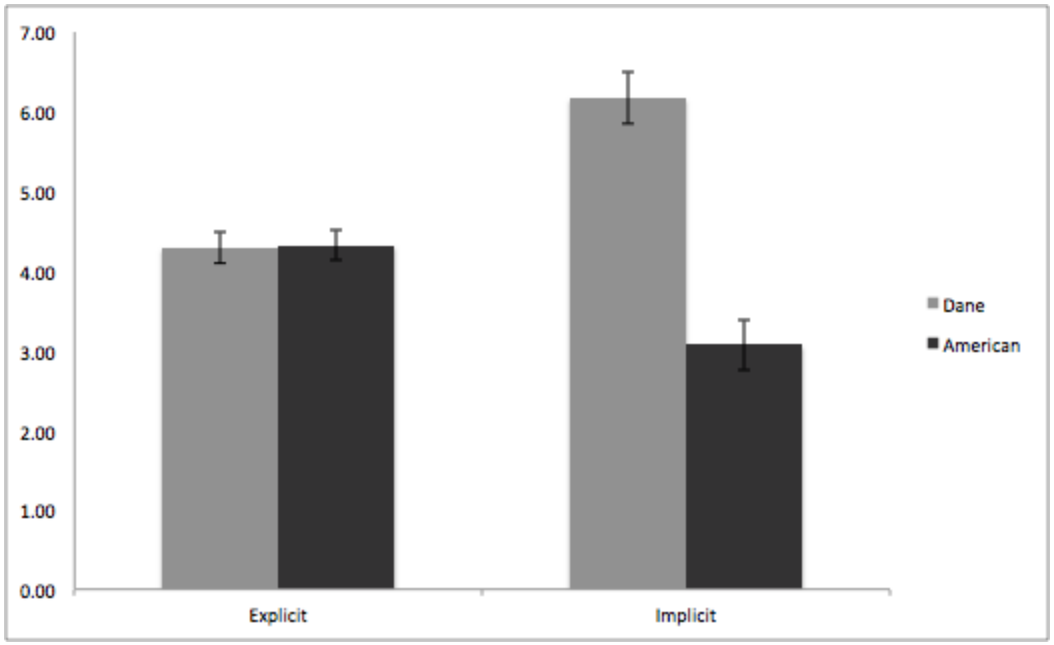

Fig. 1. Explicit and implicit happiness scores for Danes and Americans. Danes score significantly higher on the implicit happiness measures at the p=.003 level.

We also found an interesting effect of nationality on female neutral face assignment. Americans and Danes categorized male neutral faces as positive at equal rates (F (6,14)= 1.25, p=.278). However, as shown in Figure 2, Danes were significantly more likely than Americans

to categorize neutral female faces as positive (F (6,14)= 9.49 ,p=.006). We also did not find any interaction effect of gender on the assignment of female neutral faces as positive (F (6,14)=.006, p=.937). Essentially, males and females assigned positive traits to female and male neutral faces equally, but Danes were more likely than Americans to assign positive traits to female neutral faces.

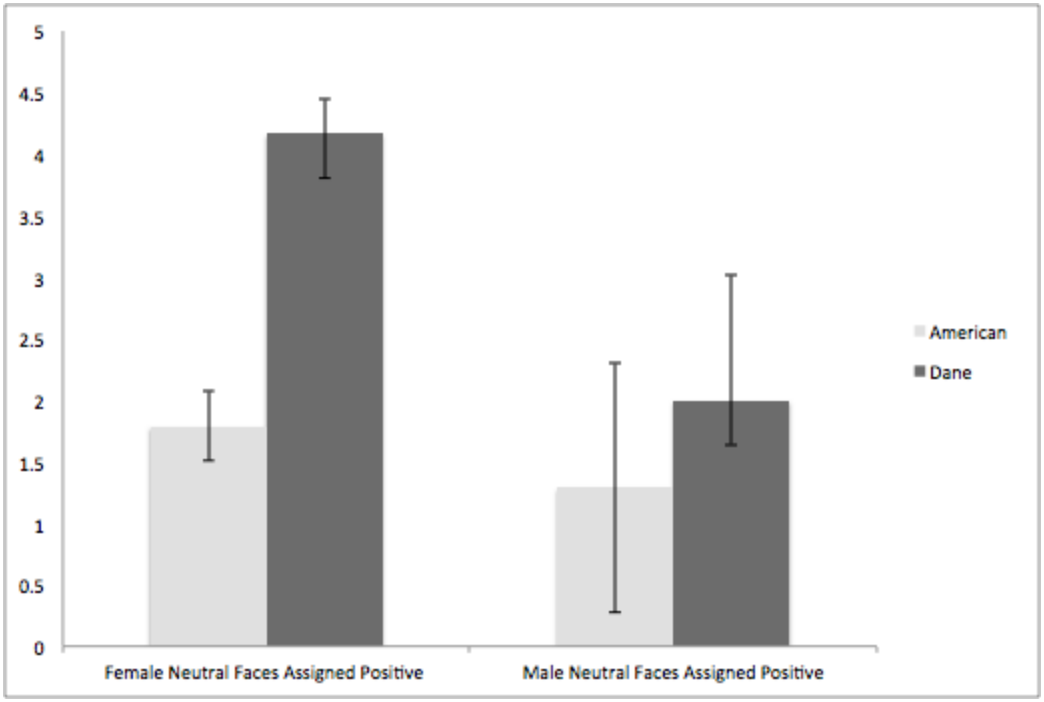

Fig. 2. American and Danish categorization of either male or female neutral faces. Danes were significantly more likely to categorize neutral female faces as positive.

Discussion

We formed this hypothesis to question the assumptions of Denmark's elevated levels of happiness and Nordic exceptionalism. Culturally, Danes tend to portray themselves as living a picturesque lifestyle, yet many feel that this is not an accurate depiction. One Dane reported, "We usually only speak with our closest friends about mental health. We're very focused on having a perfect life, so not many people like to talk about their negative feelings" (Poulsen, 2017). Based upon this understanding, we expected that Danes would show a contrast between their explicit life happiness and implicitly conveyed happiness. We developed the facial association task to test implicit happiness, which was supported by Penton-Voak et al. (2013),

who found people in positive emotional states rated neutral faces as more positive. Thus, we predicted that affective ratings of neutral faces would predict one's implicit happiness levels.We hypothesized that Danes and Americans would report relatively similar levels of explicit happiness (i.e. Oxford Happiness Questionnaire scores); however, Danes would show lower levels of implicit happiness compared to Americans (i.e. facial association task). Results of our experiment show that Danes and Americans reported relatively equal ratings of explicit happiness, but Danes scored higher on implicit measure and were more likely to rate neutral faces as positive as compared to Americans. This finding rejects our original hypothesis of Danes scoring lower on implicit happiness and thus supporting other reports claiming Denmark is a happier country than the United States.

However, it is interesting to note that in our experiment Danes showed a significant discrepancy between assigning positive or negative emotions towards neutral males and females as compared to Americans, who showed no significant discrepancy. Denmark is known for its progressive gender equality amongst its population; according to Global Gender Gap Report, the Nordic region are one of the most gender equal region in the world. Denmark ranks as the 14th most gender equal country in the world, whereas the United States ranks as 49th (World Economic Forum, 2017). However, our study shows that Danes are significantly more likely to rate neutral female faces as positive.

Findings such as this could be traced back to higher gender biases prevalent in Denmark. These biases occur before the threshold of consciousness, and therefore are an implicit influential factor in one's decision. Responses to stimulus can be affected by an individual's past experiences; neuroscientist Antonio Damasio describes the effects of one's "proto-self", a subjective contextual basis built upon prior emotional experiences and physiological changes that influences future decisions (Damasio, 2003). His somatic marker hypothesis suggests that emotional processes guide biases and future decisions (Damasio, 2008). The Danes in this experiment could have experienced positive associations with female individuals, which could have then been further reinforced by societal preconceptions about females' roles and expected behaviors. For future research and replications of this study, IAT's should be used to predict

implicit biases between subjects to determine if this is a important factor in assigning male and female neutral faces as positive or negative.

Cultural phenomenons, such as the Nordic Paradox, support the idea of possible implicit gender stereotypes and inequality amongst Danes. Nordic countries report to have the greatest number of intimate partner violence (IPV) against women in the world, with an average of 30% of women experiencing IPV (Gracia & Merlo, 2016). These statistical reports have no explanation as to why they occur at such high rates in comparison to other regions; however they produce a significant opposition to previously conceived ideals of gender equality amongst Denmark. Based upon cultural understandings and the findings from this experiment, we can conclude that although Danes explicitly express greater gender equality, implicit gender stereotypes still exist.

Suicide rates in Denmark are considerably high, with 12.3 suicides per 100,000 people, in comparison to suicide rates in the United States, with 14.3 per 100,000 people (WHO, 2015). Denmark is also top leader in highest use of antidepressants, ranking as the 5th top consumer in the world; United States is ranked number-one (Gould & Friedman, 2016). The high rates of suicide and antidepressant prescriptions combined with our results raises an important question: if the statistical evidence in terms of suicide and antidepressant use between Denmark and the United States have little difference, why does Denmark score much higher on happiness? Higher antidepressant usage could be linked to Denmark's attitudes towards depression and mental health. All Danish citizens have access to general health care; therefore, mental healthcare facilities are more accessible to Danes. Danes are also known for their blunt and confrontational nature. It is possible that Danes take more initiative to combat mental health issues, which may lead to higher amounts of antidepressant usage.

Limitations to this experiment could have possible effects on the eventual outcome of the results. Possible confounds include the number of Danish subjects obtained. Due to the small pool of participants, significance of the results could be affected as the pool may have not completely represented the population. Other probable limitations include language barriers between either the experimenter and the Danish participants, as well as the wording of the experiment itself and the Danish participants. This language barrier is important to note for

future replications or adaptations of cross-cultural studies pertaining to measuring implicit and explicit happiness via this methodology.

Conclusion

In our experiment, we hypothesized that Danish and American individuals would implicitly demonstrate different levels of happiness as compared to their reported levels of explicit happiness. We based this hypothesis on the unexplained contrast between Denmark's consistent ranking as one of the happiest countries in the world, while still having one of the highest suicide rates and antidepressant use per capita. In our experiment both groups reported similar levels of explicit happiness, yet Danes showed significantly higher levels of implicit happiness compared to Americans. Interestingly, Danes were much more likely than Americans to associate female neutral faces as positive. Though results of this experiment support Denmark's leadership in worldly happiness, they also highlight possible implicit gender inequalities within Danish society. Further research should focus on implicit gender biases in Denmark and how it could potentially affect its ranking as one of the happiest countries in the world.

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Appendix

Questions the participants were asked (along with the possible answers), starting with working memory distraction questions and ending with happiness questions

1. What length was the face's hair?: Long, Short
2. What gender was the face?: Female, Male
3. What "shade" was the face's hair?: Light, Dark
4. What kind of hair did the face have? Curly, Straight
5. Did the face have bangs? Bangs, no bangs
6. What kind of facial marks did the face have? Freckles, no freckles
7. Did the face have thin or thick eyebrows? Thin, thick
8. Did the face have their hair pulled back? Left down, pulled back
9. Did this face look: Happy, Sad (Unhappy)
10. Did this person have a good day or bad day?: Good Day, Bad Day
11. Did this face look: Positive, Negative
12. Did this person seem upset?

Edinburgh Happiness Inventory, used to measure explicit happiness

Instructions:

Below are a number of statements about happiness. Please indicate how much you agree or disagree with each by entering a number in the blank after each statement, according to the following scale:

1 = strongly disagree 2 = moderately disagree

3 = slightly disagree 4 = slightly agree

5 = moderately agree 6 = strongly agree

Please read the statements carefully, because some are phrased positively and others negatively. Don't take too long over individual questions; there are no "right" or "wrong" answers (and no trick questions). The first answer that comes into your head is probably the right one for you. If you find some of the questions difficult, please give the answer that is true for you in general or for most of the time. Those statements marked with an 'R' will be scored in reverse.

The Questionnaire

1. I don't feel particularly pleased with the way I am. (R) _____

2. I am intensely interested in other people. _____

3. I feel that life is very rewarding. _____

4. I have very warm feelings towards almost everyone. _____

5. I rarely wake up feeling rested. (R) _____

6. I am not particularly optimistic about the future. (R) _____

7. I find most things amusing. _____

8. I am always committed and involved. _____

9. Life is good. _____

10. I do not think that the world is a good place. (R) _____

11. I laugh a lot. _____

12. I am well satisfied about everything in my life. _____

13. I don't think I look attractive. (R) _____

14. There is a gap between what I would like to do and what I have done. (R) _____

15. I am very happy. _____

16. I find beauty in some things. _____

17. I always have a cheerful effect on others. _____

18. I can fit in (find time for) everything I want to. _____

19. I feel that I am not especially in control of my life. (R) _____

20. I feel able to take anything on. _____

21. I feel fully mentally alert. _____

22. I often experience joy and elation. _____

23. I don't find it easy to make decisions. (R) _____

24. I don't have a particular sense of meaning and purpose in my life. (R) _____

25. I feel I have a great deal of energy. _____

26. I usually have a good influence on events. _____

27. I don't have fun with other people. (R) _____

28. I don't feel particularly healthy. (R) _____

29. I don't have particularly happy memories of the past. (R) _____

Calculate your score

Step 1: Items marked (R) should be scored in reverse:

If you gave yourself a "1," cross it out and change it to a "6."

Change "2" to a "5"

Change "3" to a "4"

Change "4" to a "3"

Change "5" to a "2"

Change "6" to a "1"

Step 2: Add the numbers for all 29 questions. (Use the converted numbers for the 12 items that are reverse scored.)

Step 3: Divide by 29. So your happiness score = the total (from step 2) divided by 29.

We recommend you record your score and the date. Then you'll have the option to compare your score now with your score at a later date. This can be especially helpful if you are trying some of the exercises, and actively working on increasing your happiness.

Scoring

The lowest possible score is 1 and the highest possible score is 6. (The average is around 4.30).

Demographic Questions, free response, included on the mood questionnaire

1. Gender
2. Age
3. Race/Ethnicity
4. Country of Origin
5. Employment Status (full time, part time, student, etc)
6. What languages do you speak?
7. Notes

Edinburgh Handidness Inventory, given to all participants to ensure no confounds based on dominant hand

Surname_____ First Name_____

Date of

Birth_____Sex_____

Please indicate your preferences in the use of hands in the following activities by putting + in the appropriate column. Where the preference is so strong that you would never try to use the other hand unless absolutely forces to, put ++. If any case you are really indifferent put + in

both columns. Please try to answer all the questions, and only leave a blank if you have no experience at all of the object or task.

Which hand (left or right) do you prefer to use when you ....

1. Write

2. Draw

3. Throw

4. Use scissors

5. Use a toothbrush

6. Use a knife (without fork)

7. Use a spoon

8. Use a broom

9. Strike match

10. Open a jar

i. Which foot do you prefer to kick with?

ii. Which eye do you use when using only one?