

Read the following two passages and complete the writing tasks in your own words. You are encouraged to draw on your knowledge of the topics and your personal experiences. This test is 100-minute long.

### PASSAGE A

[Source: University of Vienna. "*When learning on your own is not enough: Neuroscientists delineated social decision-making in the human brain.*" ScienceDaily, 20 August 2020.]

It is no secret that people underlie social influences. For example, at the lunch counter of a new company, when we are unsure which dish would taste good, we monitor other peoples' choices to obtain some guidance for our own menu selection. This phenomenon, which is referred to as social influence, was demonstrated experimentally starting in the 1950s by social psychologist Solomon Asch.

In the new study, researchers from the University Medical Center Hamburg-Eppendorf (UKE) in Germany placed groups of five volunteers in the same computer-based decision-making experiment, where each of them was presented with two abstract symbols. Their objective was to find out which symbol would lead to more monetary rewards in the long run. In each round of the experiment, every person first made a choice between the two symbols, and then they observed which symbols the other four people had selected; next, every person could decide to stick with their initial choice or switch to the alternative symbol. Finally, a monetary outcome, either a win or a loss, was delivered to every one according to their second decision. "This way, we enable real-time interactions among the volunteers, which greatly enhances ecological validity," says study leader Lei Zhang, then at the UKE and now a postdoctoral researcher at the University of Vienna.

In fact, which symbol was related to more reward was always changing. At the beginning of the experiment, one of the two symbols returned monetary rewards in 70% of the time, and after a few rounds, it provided rewards in only 30% of the time. These changes took place multiple times throughout the experiment. "This so-called reversal learning paradigm will create uncertainty for volunteers so that they will always need to learn and relearn to gain more outcomes. In particular, when the reversal just happened, some people in the group may pick it faster than the others, and if so, the others could combine this social information into their own decision-making processes," explains Jan Gläscher, who leads a research group on valuation and social decision-making at the UKE.

Expectedly, the volunteers switched more often when they were confronted with opposing choices from the others, but interestingly, the second choice (after considering social information) reflected the reward structure better than the first choice. How to explain this finding? The researchers used sophisticated models to quantify volunteers' behavior, and they unveiled separate computational strategies for direct learning and social learning. "At the beginning of each round, the volunteers were combining their own direct learning experience and social learning experience to guide their choice," Zhang says, "whereby direct learning follows a simple reinforcement learning algorithm, and social learning is instantiated by tracking the others' reward history."

Within each group, the researchers scanned one of the volunteers' brain using functional magnetic resonance imaging, which allowed them to measure when and where the brain carries out both direct learning and social learning, and to characterize whether the two types of learning actually

are associated with different neural signatures. The brain scans showed that direct learning is represented in the area called the ventromedial prefrontal cortex, whereas social learning is represented in the area called the anterior cingulate cortex. These two areas also interact with an area in the middle of the brain called the striatum, "which computes both reward prediction error and social prediction error, quantifying trial-and-error learning to inform behavior" says Gläscher. "These indicate an integrated brain network supporting social influence in human decision-making."

These findings suggest that two unique types of learning signals are computed in distinct but interacting regions in the human brain, and represent separate computational strategies for decision-making in social contexts. "Direct learning is efficient in stable situations," explains Gläscher, "and when situations are changing and uncertain, social learning may play an important role together with direct learning to adapt to novel situations, such as deciding on the lunch menu at a new company."

"There has been a lot of research on direct learning but relatively little on social learning and how they interact," Zhang says. What is next? "An important area for further research will be to disrupt part of the identified network using non-invasive brain stimulation techniques, and to determine how behaviors and computation strategies are altered in social decision-making," Gläscher says. "And in light of the ongoing COVID-19 pandemic, there is no way individuals and governments learn from mistakes all by themselves, and instead, a global and collective human society is needed to address all these challenges."

● **Writing Tasks (50%)**

1. What are the main ideas of this article? Please use YOUR OWN WORDS to summarize the main ideas of the above passage in around 200 words. (20%)
2. Do you agree or disagree with the findings of the reported study? Why or why not? Please provide some examples from your own learning experiences to explain and to support your position. (30%)

**PASSAGE B**

[Source: Raisa Bruner. "What Jane Austen Can Teach Us About Staying Home." *Time Magazine*, 15 May 2020.]

Long, solitary walks. Family dinners. Days spent wondering when life might change. Evenings spent in quiet entertainment: reading, scrolling, reminiscing. These are the routines of present-day isolation. But give or take a few centuries, a few social-media apps and more than a few civil rights, I might as well be describing the days of Jane Austen's heroines. There's a strangely comforting echo between the staid lives of her early 19th century women and current circumstances, for those of us fortunate enough to have our greatest challenge be coping with staying home.

In my first 50 days of isolation with family in our Idaho town, I read only Austen's novels—and I read them all. Something about the old-fashioned language, rules and predictably happy endings of her sharp romantic comedies offered stability. I was privileged to be safe and well. But like so many others coming to terms with a confined reality, I also felt somewhat adrift, cut off from the gratifying motion of life in the 21st century.

I benefit from many freedoms, including my choice of a profession, far more than Austen's characters could claim. But the more I immersed myself in the worlds of *Persuasion*'s sweet-tempered Anne Elliot, *Sense and Sensibility*'s thoughtful Elinor Dashwood and fellow protagonists, the more I found an unexpected kinship. To be a woman of a certain class in Regency England was to be socially distanced by default—isolated in the country-side, living at the pace of the seasons, beholden to restrictions set by others (namely, men). Set aside the reasons for being confined and we're left with a defining commonality: the need to fill our days at home.

Take Fanny Price of *Mansfield Park*, treated by family like a servant. With no opportunity for escape, Fanny relies dearly on her patience. While her cousins chase romance, she serves her aunts: as an exploited companion, sewing in demure silence, and as a constant target of snide comments. If Fanny can be kind and forgiving to less-than-deserving relatives—well, that's a humbling example for someone who recently snapped when asked to fix the TV.

At heart, Austen's heroines are homebodies, attached deeply (by default, perhaps) to their families and the locations they frequent on their moody walks. Emma Woodhouse is so committed to her father and their estate that she persuades her future husband to move in. The Dashwood sisters, though forced to move to a small cottage after their father's death, find joy there. "Is there a felicity in the world," Marianne asks while on a walk in nearby fields, "superior to this?"

Thanks to her family's precarious finances, Austen herself relied on the generosity of relatives, moving often. In the last year of her life, she was working on *Sanditon*, about a young woman visiting a family at their seaside home, when she became ill. "Sickness is a dangerous indulgence at my time of life," she wrote to her niece, forbearing even in bad health. She died a few months later, leaving the bulk of *Sanditon* unwritten. Even so, it is her most acute social critique, a spiky takedown of social climbers and travelers. It hints at her distaste for those who could not be satisfied with staying home, a luxury she could not always afford.

It can be strange to reorient to a single place, to recognize that our modern transience—moving homes, taking vacations, mingling with strangers in bars—is in some ways a recent privilege. Before this year, I had never noticed the snow's slow retreat from our porch or watched the buds on the cottonwood trees turn spring's iridescent green. I hadn't sat down to dinner with the same people every night in years; hadn't helped plan a week's worth of home-cooked meals, written a letter or sipped a drink with nowhere to go. Things are not as they should be, but I can admit that these are joys too—modest domestic pleasures that Austen's women know and cherish so well.

### ● Writing Tasks (50%)

1. In your opinion, why does the author see Austen as a perfect candidate for teaching us about the benefit of staying home? (25 %)
2. Please imagine a situation in which you have to stay home for over a month. How do you arrange your daily routine? What are the unexpected inconveniences? What can you gain or benefit from this situation? (25%)