

令和 5 年 度

試 験 問 題 ②

学 科 試 験

(9時～12時)

【注 意】

1. 試験開始の合図があるまで、この問題冊子の中をみてはならない。
2. 試験教科、試験科目、ページ、解答用紙および選択方法は下表のとおりである。

教 科	科 目	ペー ジ	解 答 用 紙 数	選 択 方 法
数 学	数 学	1～10	2 枚	数学、英語は必須解答とする。 理科は左の3科目のうちから1科目を選択せよ。
英 語	英 語	11～14	3 枚	
理 科	化 学	15～24	2 枚	
	生 物	25～42	2 枚	
	物 理	43～50	1 枚	

3. 監督者の指示に従って、選択しない理科科目を含む全解答用紙(10枚)に受験番号と選択科目(理科のみ)を記入せよ。
 - ① すべての受験番号欄に受験番号を記入せよ。
 - ② 理科は選択科目記入欄に選択する1科目を○印で示せ。

上記①、②の記入がないもの、および理科2科目または理科3科目選択した場合は答案全部を無効とする。
4. 解答はすべて解答用紙の対応する場所に記入せよ。
5. 問題冊子の余白を使って、計算等を行ってもよい。
6. 試験開始後、問題冊子の印刷不鮮明、ページの落丁・乱丁および解答用紙の汚れ等に気づいた場合は、手を挙げて監督者に知らせよ。
7. 解答用紙はいずれのページも切り離してはならない。
8. 解答用紙は持ち帰ってはならない。問題冊子は持ち帰ってよい。

—余 白—

(このページに問題はありません)

英 語

I. Write 70-100 words about your life goals. (30 点)

This task will be graded on both content and the accuracy of the English language used.

II. 次の英文を読んで、設問に答えよ。(* 印の語には注がある。)(60 点)

Your excitement starts to build at the prospect of traveling — exploring different and potentially new locations, eating different foods, and making new memories. (1) それには少しばかりの計画を立てる必要が生じるでしょう。ですが、家から一歩も出ずに、一日中テレビを見て、ソファーに座って過ごしてしまったことを想像してみてください。

One of the hardest things about COVID-19 is that quarantine* has greatly limited our ability to pursue new experiences. Studies show that the inability to engage in our typical environments has undoubtedly endangered people’s mental health — you may be able to relate to this. Nevertheless, especially for those of you who normally find it difficult to try new activities, you may have found great comfort in pushing yourself to find some sort of rhythm this past year. Whether it was engaging in a new hobby, setting new goals, or walking to a part of the neighborhood you’ve never been to before, finding different ways to live your daily life seems to be beneficial and quite refreshing to many of us.

From these examples, hopefully you can start to see how experiential diversity, or going to new (or at least different) places and/or engaging in different experiences, can improve overall well-being. This principle is quite natural to us since many would agree that going on vacation — or perhaps, for those who aren’t as outgoing, finding different activities to do each day — makes us happier. In more clear terms, human experience suggests that experiential diversity may be associated with increased positive emotions, which makes sense since exploration seems to be a natural human desire.

Interestingly, research on animals has shown that new experiences are beneficial. Animals that can move freely within environments that offer diverse experiences exhibit greater mental well-being — in other words, they exhibit increased social

activity and an enhanced ability to respond to stressful situations. Notably, these behavioral effects are accompanied by significant changes in brain structure and function, particularly in the neural* regions responsible for memory and responding to rewarding stimuli.

On the other hand, there have been few studies that looked at variation in experiential diversity and its relationship to positive emotional states in humans. Encouragingly, a recent study by Heller and his team uses a GPS-like tool to look at the association between real-world experiential diversity and positive emotions for humans, and the underlying neural mechanisms that may control this relationship.

Heller's team tracked the location of participants* and measured their GPS coordinates* over a day. In previous studies, this mode of geolocation* tracking has been verified as a successful tool to assess experiential diversity in animals. Thus, the current study aimed to examine whether daily movement could serve as an accurate assessment of experiential diversity by relating it to changes in positive emotions in humans.

A total of 132 participants were monitored for 3-4 months, and were asked to provide assessments of positive and negative emotions at random times throughout the day using a smartphone system. A participant's geolocation score was higher for days in which the participant visited a greater number of locations and spent a similar time across these locations.

Finally, at the end of the geolocation tracking period, a small group of these participants was screened for eligibility* for an MRI (a scan to examine brain activity). This was done to better understand how different parts of the brain work together in explaining the potential relationship between experiential diversity and well-being.

As expected, the researchers found that positive emotions were higher on days when a participant's geolocation score was greater, suggesting that daily exposure to new experiences is associated with well-being. It is worth noting that the researchers also sought to see whether or not this relationship was (2)bidirectional — in other words, if individuals are also more motivated to explore their environments on days they are

feeling better. Interestingly, in this second set of experiments, they confirmed that experiential diversity is associated with more positive emotions, and they also found that this in turn is associated with more new and diverse experiences the next day. This is consistent with the theory that behaviors promoting positive emotions can create positive feedback loops, or “upward spirals”, that promote subsequent development of more positive emotions.

注

quarantine* 隔離

neural* 神経(系)の

participants* 参加者, 被験者

coordinates* 座標

geolocation* 地理的位置

eligibility* 適格性

設問

1. この記事の主旨を, 予備知識のほとんどない人に伝えるつもりで, 日本語で説明せよ。(解答欄内に収まるように横書きし, 段落は1つのみとして, アルファベット, 数字, 句読点を1文字として記すこと。)(20点)
2. 下線部(1)を英訳せよ。(20点)
3. 下線部(2)の“bidirectional”とはこの文脈で具体的にどのようなことを指すか, 日本語で記せ。(10点)
4. Hellerのチームが行った実験の方法と結果について, 具体的に日本語で記せ。(10点)

III. (1)～(5) の英文を完成するために、それぞれのかっこの中に入れるべき最適の語を選んで、英語で記せ。(10 点)

- (1) The owners of the theme park have been trying to (a)(negate / unify / highlight / achieve / convince) the general public that it is a safe place after two people were (b)(accessed / regulated / transmitted / injured / preceded) at the theme park last month.
- (2) English has become an (a)(integral / adequate / ultimate / empirical / overseas) part of the university's curriculum, and a student's overall English ability is also used as part of the university's selection (b)(technology / colleague / process / ministry / commodity).
- (3) Many people continue to (a)(resolve / deny / assign / terminate / consist) that there is a causal (b)(panel / link / alternative / decade / text) between human actions and climate change.
- (4) Nobody could have (a)(varied / attained / predicted / declined / justified) that the shy little boy would one day become a global sex (b)(symbol / aspect / schedule / cycle / interval).
- (5) The company (a)(revenues / techniques / analogies / guidelines / factors) state that employees who (b)(consume / exceed / infer / react / legislate) their sales targets are eligible to receive a bonus.

(使用語彙はAveril Coxhead の*Academic Word List* (AWL) より.)

IV. Write approximately 120 words using the format given in the answer sheet and according to the following instructions:

Argue “for” or “against” limiting people’s freedom of movement during a pandemic.

(50 点)

This task will be graded on both content and the accuracy of the English language used.

(別紙解答用紙IVの様式にしたがって解答せよ.)