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Study of emotional recognition task on individuals with addiction to short-form videos

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CONTENT

Background

Internet addiction

- A disorder in which an individual's inability to control his or her use of the Internet.
- Negative consequences on users' well-being, such as mental health problems, attention difficulties, and poor interpersonal quality

Short-form video addiction

- Subcategory of Internet addiction.
- Growing public concern with the popularity of short-form video applications.

Background

Internet addiction has been found to be related to deficits in emotional recognition, as indicated by many studies:

- Individuals with **problematic internet use** (PIU) and **excessive smartphone use** (ESU) show **impairments in recognizing emotional face expressions** (EFE)(Arato et al.,2023).

- Specific internet addiction, such as **addiction to games** and **social networks**, has been found to be associated with **impaired inhibitory control and social anxiety**, which may affect emotion recognition(Dieter et al.,2017).

- **Internet-addicted urban left-behind children** have been found to have differences in facial expression recognition, with a processing mode characterized by **earlier gaze acceleration** and **uniform extraction of information in pictures** (Ge et al.,2017). Also, they showed a **preference for negative emotions** in facial expression recognition (Ge et al.,2014).

Though several research have been done on Internet addiction, there haven't been any research on the influence of short-form videos on emotion recognition with the popularity of short-form videos these years.

Research Questions

Aim 1

- **Whether** people with short-form video addiction **differ** from non-addicted individuals in terms of emotion recognition

Aim 2

- **How** people with short-form video addiction **differ** from non-addicted individuals in terms of emotion recognition.

Methods

Participant:

10 subjects are recruited from the University of Macau, 5 of whom were addicted to short videos and 5 of whom were normal people.

QUEATIONAIRE
The Mobile Phone Addiction Index (MPAI) (Huang et al., 2014)

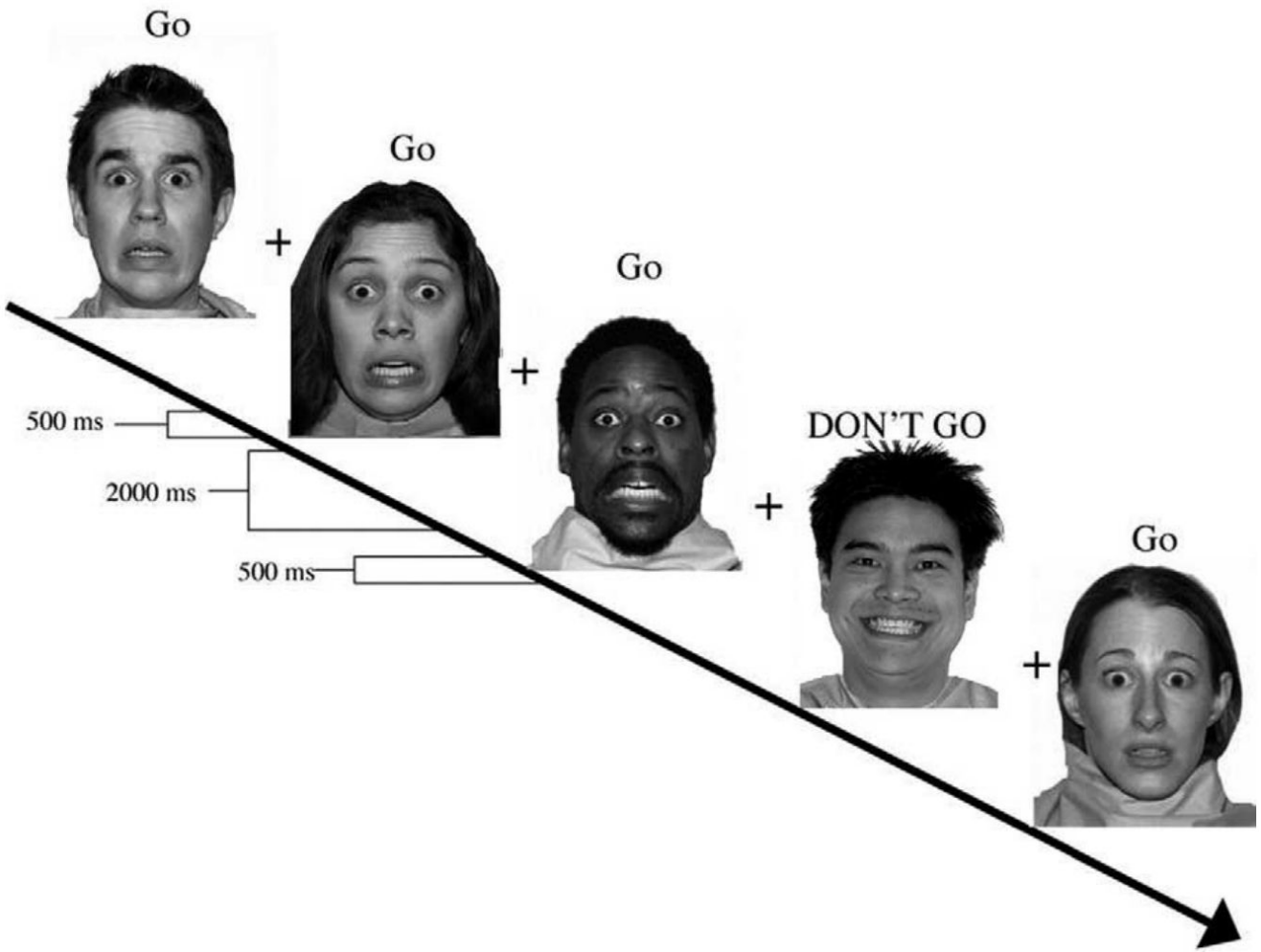
短视频成瘾问卷

请仔细阅读下面的每一条陈述，判断你在使用短视频 APP（如抖音、快手、微视等）时，与你的感受或行为相符合的程度，然后在右边相应的答案上画“√”。选项不分正确与否，因此不必对任何一条陈述花太多时间去考虑，只要答出你平时的实际感受就可以了。

本问卷采用五点等级评分，请根据与自己的符合程度在相应的数字上打“√”。

问卷	下面是一些自我评价的表述，请结合自身的情况，根据这些看法和评价与您相符合的程度在相应的数字打“√”。（短视频成瘾）	非常不符合	不太符合	不确定	比较符合	非常符合
1	你的朋友和家人曾因为你在观看短视频而抱怨	1	2	3	4	5
2	有人说过你花了太多的时间观看短视频	1	2	3	4	5
3	你曾试图向其他人隐瞒你在观看短视频上花了多长时间	1	2	3	4	5
4	因观看短视频担心你的流量超支	1	2	3	4	5
5	你发现自己观看短视频的时间比本来打算的要长	1	2	3	4	5
6	你尝试在观看短视频上少花些时间但是做不到	1	2	3	4	5
7	你从未觉得在观看短视频上花的时间足够多	1	2	3	4	5
8	当在一段时间未使用手机，你会在拿到手机的第一时间打开视频 APP	1	2	3	4	5
9	你很难做到将短视频 APP 卸载	1	2	3	4	5
10	如果你有一阵子没有观看短视频，你会变得焦虑	1	2	3	4	5
11	没有观看短视频你会心神不定	1	2	3	4	5
12	如果你不观看短视频，你不知道你该干什么	1	2	3	4	5
13	当感到被孤立时，你会用手机观看短视频	1	2	3	4	5
14	当你感到孤独的时候，你会用手机观看短视频	1	2	3	4	5
15	当你情绪低落的时候，你会观看短视频来改善情绪	1	2	3	4	5
16	你发现自己在其他必须要做的事情时却沉迷于观看短视频，为此给你带来些麻烦	1	2	3	4	5
17	观看短视频耗费的时间直接导致你的办事效率降低	1	2	3	4	5

Methods



The Emotional Recognition Go/ NoGo task

- The Emotional Recognition Go/ NoGo task is a cognitive task designed to assess **information processing bias** between different facial expressions.

- In this task, participants must **respond to a particular** emotional facial expression (neutral, sad, happy and so on) (Go trials) and **not respond** (NoGo trials) **to another** emotional facial expression. **Reaction times(RT)** will be recorded for further calculations to get emotional bias scores.

Methods

Project Emotional_Recognition_go_nogo_Task

The plus sign is displayed for 1s
Show faces
Subject presses the button
Records the data stored each time

Reaction times (RT) were calculated for all “hit” responses in the six conditions. Emotional bias scores were calculated by subtracting the sad target/happy distractor condition RT from the happy target/sad distractor condition RT.

Use the PROCEDURE in git-hub

Emotional_Recognition_go_nogo_Task

Program Demonstration

Results

The questionaire data

	index	totalva...	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	1	61	2	2	2			4	4	4	3	5	4	2	3	4	3	3	3
2	2	51	1	2	1			4	4	4	1	5	4	2	4	2	2	1	1
3	3	45	2	2	2			4	4	4	3	3	2	2	1	1	3	2	1
4	4	57	1	2	2			4	4	4	4	4	4	4	2	4	2	2	2
5	5	43	1	2	2			4	4	2	2	3	3	2	2	2	2	2	2
6	6	39	2	2	2			2	2	2	2	4	4	4	1	1	1	1	1
7	7	60	1	2	2			4	4	4	1	4	5	5	3	4	3	3	2
8	8	53	2	2	2			3	3	4	1	4	4	5	2	3	4	3	2
9	9	34	2	2	2			2	2	2	1	3	2	3	1	1	2	1	1
10	10	30	2	2	2			3	3	2	1	3	1	3	1	1	1	1	1
11	11	57	1	2	2			2	2	5	1	5	4	4	3	4	2	2	1
12	12	55	1	2	2			4	4	3	2	4	3	4	3	4	2	2	2
13	13	64	2	2	2			3	3	5	2	5	5	5	3	4	3	3	3
14	14	40	2	2	2			2	2	1	1	4	2	3	2	3	2	2	2
15	15	67	2	2	2			5	5	5	2	5	5	5	4	4	4	3	2
16	16	58	2	2	2			3	3	3	2	4	4	4	4	3	3	3	2
17	17	34	1	2	2			1	1	1	1	3	3	3	2	2	1	1	1
18																			

Privacy: phone number and email address

Results

The reliability of internal consistency was measured by 17 existing questionnaires. The value of the α is greater than 0.6, the internal consistency reliability is high enough.

Original questionaire：0.91

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.919	.923	17

- Addicted：2,7,8,11,13,15,16
- Normal：
  - Inclined：1.4.12
  - None：3,5,6,9,10,14,17

We choose the last 10 (5 addicted, 5 normal) participants to perform the Emotional Recognition Go/ NoGo task.

Results

The Emotional Recognition Go/ NoGo task data

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	subject_nu	avg_cor_1	avg_rt_1	avg_cor_2	avg_rt_2	avg_cor_3	avg_rt_3	avg_cor_4	avg_rt_4	avg_cor_5	avg_rt_5	avg_cor_6	avg_rt_6	avg_whole	avg_whole	ED_score
2	1	1	0.391014	0.833333	0.333689	1	0.348344	0.916667	0.379853	0.75	0.389645	0.833333	0.306407	0.888889	0.791671	0.001369
3	2	1	0.465336	0.916667	0.466932	1	0.426812	0.833333	0.476624	0.916667	0.441082	0.75	0.451883	0.902778	0.952488	0.024254
4	3	0.916667	0.35666	0.916667	0.315491	0.916667	0.388873	0.833333	0.614147	1	0.474417	0.916667	0.344472	0.916667	0.802792	-0.11776
5	4	1	0.307987	1	0.308136	0.916667	0.312422	0.75	0.354907	0.916667	0.409043	0.833333	0.367444	0.902778	0.672673	-0.10106
6	5	1	0.402394	0.833333	0.431511	1	0.367204	0.75	0.804338	1	0.568505	1	0.656016	0.930556	1.013816	-0.16611
7	6	0.916667	0.330069	0.916667	0.245449	1	0.289035	0.916667	0.31449	1	0.524558	0.916667	0.378194	0.944444	0.697451	-0.19449
8	7	1	0.331581	1	0.432921	1	0.408306	1	0.333185	0.916667	0.423476	0.916667	0.467875	0.972222	0.819905	-0.09189
9	8	0.916667	0.580638	0.916667	0.47864	1	0.506242	0.916667	0.51948	0.916667	0.655156	1	0.601217	0.944444	1.113605	-0.07452
10	9	1	0.323747	1	0.359071	1	0.272585	1	0.401855	0.916667	0.344759	1	0.358723	0.986111	0.696689	-0.02101
11	10	0.916667	0.45396	1	0.62673	1	0.496728	0.916667	0.571248	1	0.488817	1	0.703465	0.972222	1.085171	-0.03486

Results

Weighted reaction time

weighted_average_rthappy	weighted_average_rtneutral	weighted_average_rtsad
.36	.36	.35
.47	.45	.45
.34	.50	.41
.31	.33	.39
.42	.55	.61
.29	.30	.45
.38	.37	.45
.53	.51	.63
.34	.34	.35
.54	.53	.60

Results

Nonparametric Correlations

Correlations

			weighted_average_rthappy	weighted_average_rtneutral	weighted_average_rtsad	sum
Spearman's rho	weighted_average_rthappy	Correlation Coefficient	1.000	.794**	.564	-.225
		Sig. (2-tailed)	.	.006	.090	.532
		N	10	10	10	10
	weighted_average_rtneutral	Correlation Coefficient	.794**	1.000	.624	-.377
		Sig. (2-tailed)	.006	.	.054	.283
		N	10	10	10	10
	weighted_average_rtsad	Correlation Coefficient	.564	.624	1.000	.188
		Sig. (2-tailed)	.090	.054	.	.602
		N	10	10	10	10
	sum	Correlation Coefficient	-.225	-.377	.188	1.000
		Sig. (2-tailed)	.532	.283	.602	.
		N	10	10	10	10

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations are not significant.

Results

Group Statistics

	group	N	Mean	Std. Deviation	Std. Error Mean
weighted_average_rthappy	>= 1.50	5	.4288	.08004	.03579
	< 1.50	5	.3664	.09600	.04293
weighted_average_rtneutral	>= 1.50	5	.4807	.07319	.03273
	< 1.50	5	.3692	.08315	.03718
weighted_average_rtsad	>= 1.50	5	.5025	.09405	.04206
	< 1.50	5	.4337	.11637	.05204

1=Addicted group, 2=Normal group

Results

Independent Samples Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
weighted_average_rthappy	Equal variances assumed	.016	.901	1.118	8	.296	.06247	.05589	-.06643	.19136
	Equal variances not assumed			1.118	7.749	.297	.06247	.05589	-.06716	.19209
weighted_average_rtneutral	Equal variances assumed	.001	.976	2.250	8	.055	.11146	.04954	-.00278	.22570
	Equal variances not assumed			2.250	7.873	.055	.11146	.04954	-.00310	.22602
weighted_average_rtsad	Equal variances assumed	.018	.896	1.027	8	.334	.06872	.06692	-.08559	.22303
	Equal variances not assumed			1.027	7.663	.336	.06872	.06692	-.08678	.22422

No significant variance between the two groups.

Conclusion and future work

- Behavioral data shows no significant results on the correlation between questionnaire score and reaction time and the between-group difference of reaction time.

- Reflection on future work

1. Increase sample size
2. Exclude participants with depression or anxiety
3. Conduct more assessments before experiment, such as personality trait, IQ, gender .etc.
4. Add neuroimaging techniques to explore underlying mechanisms.

- Implications
  - Develop targeted preventions and interventions of short-form video addiction from the perspective of emotion.

THANK YOU