Emotion Recognition in Adolescence:

influences of Emotion Processing and Socio-emotional factors

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Background

- The ability to successfully recognise emotions is a fundamental skill that allows individuals to navigate and engage in their social environments (Watling, Workman & Bourne, 2012), and one which little is known about in adolescence.
- We know that the prevalence and onset of many psychiatric disorders happens in adolescence, with 36.7% of 9-16 year olds being diagnosed with at least one psychiatric disorder, and depression and social anxiety are amongst the most prevalent (Costello, 2003). It is also known that hormonal fluctuations, for which there are many in adolescence, may influence how we process emotions (Bourne & Gray, 2009).
- Individuals with social anxiety and depression have been found to make different decisions on emotion based tasks (e.g., more sensitive to negative faces, slower responses, and more errors; Mikhailova et al., 1996; Yoon & Zinbarg, 2007) .

Aims

- This is the first wave of longitudinal data, examining how much variance social-emotional factors (level of social anxiety and depression) and the degree of lateralisation for emotion processing can explain how well individuals can recognise emotions.

Method

Participants

The sample consisted of **278** females from 3 age categories; **11-12** (N=130) **13-14** (N=155) and **15-16** (N=20). Participants were recruited from Secondary schools in the South of England.

1. Child Depression Inventory (Kovacs, 1983)

Measure of five aspects of depression symptoms. (1) Negative Mood (2) Interpersonal Problems (3) Ineffectiveness (4) Anhedonia and (5) Negative-self-esteem

2. Social Anxiety Scale for Children Revised (La Greca & Stone, 1993)

Measure of three aspects of social anxiety in children; (1) Fear of new situations, (2) Fear of general situations and (3) Fear of negative evaluation.

3. Emotion Processing Measure: The Chimeric Face Test (NimStim)

Participants viewed a computerized version of a chimeric face test, designed using NIMH images. This consisted of 6 blocks; 1 for each of the basic emotions (i.e. happiness, sadness, anger, surprise, disgust, fear).Laterality quotients ranged from -1 (LH) to +1 (RH)

4. Emotion Recognition Task

Students viewed emotional morphs at 3 different intensities (e.g., 30%, 50%, and 70%). Participants were asked to identify which facial emotion the stimuli is expression from happy, sad, angry, scared, disgust, fear and no emotion/neutral.

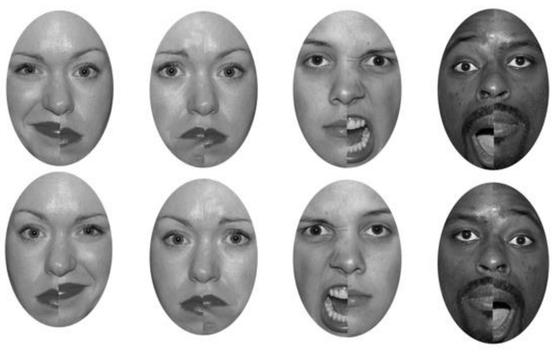

Figure 1: Examples of chimeras created. From left to right faces represent happy, sad, angry and surprise.

Figure 2: Examples of NIMH anger at 30,50 and 70% intensity.

Results

	Mean (SD)	Range
Age	13.05 (1.32)	11-16.51
ER total	59.67 (8.05)	7-74
SA FNE	25.05 (7.75)	8 -40
SA Gen	8.93 (3.76)	4-20
SA New	17.04 (5.04)	6-29
Depression	39.18 (8.90)	26-70
Happy LQ	.208 (.58)	-1-1
Sad LQ	.147 (.41)	-1-1
Surprise LQ	.236 (.60)	-1-1
Disgust LQ	.179 (.55)	-1-1
Anger LQ	.210 (.51)	-1-1
Fear LQ	.205 (.53)	-1-1
Happy Total	10.53 (1.84)	1-12
Sad Total	7.26 (2.13)	0-12
Surprise Total	10.54 (1.84)	1-12
Disgust Total	8.66 (2.39)	1-12
Anger Total	6.07 (2.21)	0-12
Fear Total	7.29 (2.36)	0-12

Table 1: Mean (SD) and range for all continuous variables.

Regression results:

Happy: Final model significant F(6,276)=4.585, p<.001, explaining 9.2% of the variance in happiness scores.

Sad: First model approaching significance, F(1,276)=3.274, p=.071.

Fear: Second model significant F(2,276)=4.704, p=.010. Model 2 is significantly better at predicting fear recognition above and beyond age F(2,274)=8.838, p=.003.

The model was not significant for **Anger, Disgust,** and **Surprise.**

	Happy	Sad	Angry	Surprise	Disgust	Fear
Block One						
Age	-.009	.190	.507	.061	.114	-.087
Block Two						
Age	.006	.183	.428	.074	.118	-.074
Emotion LQ	.289	-.144	.216	.234	.109	*.784**
Block Three						
Age	.107	*.243**	.142	.142	.182	-.113
Emotion LQ	.234	-.252	.337	.181	.097	*.803**
Social Anxiety (New)	-.017	-.056	.504	-.022	.060	-.005
Social Anxiety (Gen)	-.041	.028	.361	-.043	-.054	-.007
Social Anxiety (FNE)	*.057**	.022	.476	.016	-.002	.019
Depression	*-.067**	-.028	.188	-.022	-.041	.010

Table 2: Regression models, predicting emotion recognition accuracy for each emotion. Significant predictors are italicised.

	Total ER	Fear	Happy	Sad	Surprise	Anger	Disgust
SA FNE	-.043	.051	-.032	-.026	-.073	.002	-.037
SA Gen	**-.134***	-.006	-.113	-.049	**-.128***	-0.63	-.042
SA New	-.082	.006	-.099	-.077	-.107	-.056	.022
Depression	**-.191****	.025	**-.235****	-.067	**-.137***	-.016	**-.126***
Happy LQ	.102	.008	.108	.010	.059	-.018	**.133***
Surprise LQ	.101	.083	.034	-.001	.070	-.030	.079
Disgust LQ	.053	.037	.033	-.019	.093	-.035	.038
Anger LQ	**.134***	**.170****	.051	.030	**.118***	.101	.032
Fear LQ	**.224****	**.173****	**.150****	.021	**.134***	.107	.083
Sad LQ	**.203****	**.121***	.102	.014	**.140***	-.035	.079

Table 3: Correlations between emotion recognition accuracy for each emotion and all measures of SA, Depression and Laterality. Note: * p < .05, ** p < .001

Discussion

- This is the first wave of a three wave longitudinal study.
- Findings show that both socio-emotional factors and emotion processing contribute to emotion recognition accuracy; in particular, happy, sad, and fear.
- Through subsequent waves we will be able to gain an understanding of how **changes** in social anxiety, depression, and emotion processing may affect emotion recognition to develop a model of emotion recognition.

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