

# RECONSIDERING...

## DELAYED RESPONSE for IMPROVED ACCURACY



### ALEXITHYMIA AND EMOTION LABELING OF FACES, BODIES, AND FACE-BODY COMPOUNDS

Research conducted by Yeung Kam Fan, under supervision of Prof. Chiu Chui-De

## INTRODUCTION

While **alexithymia** describes difficulties in identifying, analyzing, and describing one's own emotions, research had **inconsistent findings regarding the emotion labeling performance** among individuals with alexithymia. It has been postulated that these individuals may struggle to effectively process the perceptual properties of emotional stimuli, which could contribute to their poor accuracy. However, they often performed well when there were no temporal or perceptual constraints.

The study **aims** to expand the research scope on the emotion labeling performance in terms of accuracy and reaction time of alexithymic individuals beyond facial expressions by including bodily expressions and face-body compounds in the investigation. Also, the study aims to examine whether alexithymic individuals tend to rely on bodily cues when understanding the emotions of others.

To address these objectives, individuals with high alexithymia (HA) and low alexithymia (LA) were recruited and instructed to label the emotions conveyed through **facial expressions, bodily expressions, and congruent and incongruent face-body compounds.**

## RESEARCH HYPOTHESES

- H1:** No significant difference between the HA group and the LA group when labeling facial and bodily expressions, and congruent face-body compounds
- H2:** Significantly longer reaction times for the HA group compared to the LA group when labeling facial and bodily expressions, and congruent and incongruent face-body compounds
- H3:** Significantly greater tendencies for the HA group to categorize the incongruent face-body compounds as the emotion conveyed by the body, compared to the LA group

## METHOD

According to the scores on the Bermond-Vorst Alexithymia Questionnaire Form B (BVAQ-B), those who scored  $\geq 50$  were classified as the HA group, while those who scored  $\leq 45$  were classified as the LA group. A total of 68 subjects are included with 38 belonging to the HA group and 30 belonging to the LA group.

## PARTICIPANTS

## ALEXITHYMIA

The Bermond-Vorst Alexithymia Questionnaire Form B (BVAQ-B; Bermond et al., 1999) was administered as a self-report measure of alexithymia. The 20 items of the BVAQ-B were divided into five subscales: (1) difficulty in identifying the nature of one's own emotions, (2) difficulty in analyzing one's own emotional states, (3) difficulty in verbalizing one's own emotional states, (4) difficulty in emotionalizing, and (5) difficulty in fantasizing about virtual matters. Participants rated their agreement with each statement on a 5-point Likert scale, ranging from 1 ("This definitely applies") to 5 ("This not at all applies"). Higher scores indicated higher levels of alexithymia.

## EMOTION LABELING TASK

The computerized emotion recognition task from Leitzke and Pollak (2016) was adopted. The task consisted of two blocks. In the main experiment block, participants were shown images of individuals displaying facial expressions aligned with bodily expressions. Each expression conveyed either disgust or anger, resulting in two congruence conditions of face-body alignment. Stimuli with congruent face-body alignments had facial and bodily expressions conveying the same emotions; while stimuli with incongruent face-body alignments had facial and bodily expressions conveying different emotions. In the control block, participants were shown images of isolated facial expressions, each aligned with a still body showing from the head down to the shoulders, and images of isolated bodily expressions, each aligned with a face overlapped by a plain gray color that covered all the facial elements. In both blocks, participants were prompted with the question "What is this person feeling?" They recognized the emotion of the stimuli by selecting from a forced choice of options: "Anger", "Sadness", "Fear", or "Disgust". All trials were self-paced (i.e., were given no temporal constraint) and no feedback was provided.

## RESULTS

- ✓ **H1:** The HA group demonstrated comparable accuracy to the LA group when labeling facial expressions, bodily expressions, and congruent face-body compounds
- ✗ **H2:** The HA group exhibited significantly greater response latencies only when labeling facial expressions, but not when labeling bodily expressions, congruent nor incongruent face-body compounds
- ✗ **H3:** The HA group did not exhibit a significant stronger categorization tendency as body when labeling incongruent face-body compounds.

## DISCUSSION

### NO TRADEOFF BETWEEN ACCURACY AND REACTION TIME FACIAL EXPRESSIONS

The current study showed a tradeoff relationship between accuracy and reaction time when labeling facial expressions among individuals with alexithymia, which aligned with previous studies (Thme et al., 2014a; Thme et al., 2014b; Maiorana et al., 2022).

### BODILY EXPRESSIONS

The tradeoff relationship was not observed when labeling bodily expressions. It is worth noting that participants in both alexithymia generally recognized the emotion of bodily expressions ( $M = .95$ ) more accurately than facial expressions ( $M = .54$ ). Such remarkably high accuracy rates might rise suspicions that the bodily expressions used in the study were too easily recognized. These results could be attributed to the limited variety of bodily expressions tested, as there was only one bodily expression for each emotion. Moreover, disgust and anger bodily expressions were tested twice, potentially increasing familiarity with those stimuli and masking any potential differences between the alexithymia groups.

### CONGRUENT FACE-BODY COMPOUNDS

No significant differences in both accuracy and response latency between alexithymic groups in labeling congruent face-body compounds were observed. When individuals recognize the emotion in face-body compounds, they need to integrate perceptually distinct yet valence-similar information. Previous studies suggested the integration of emotional information depends on perceived credibility (Chen & Whitney, 2022), which individuals assign different weights during the integration according to. Therefore, the current findings could be because both groups heavily relied on bodily expressions, which are less ambiguous.

### NO GREATER PREFERENCE FOR BODILY CUES

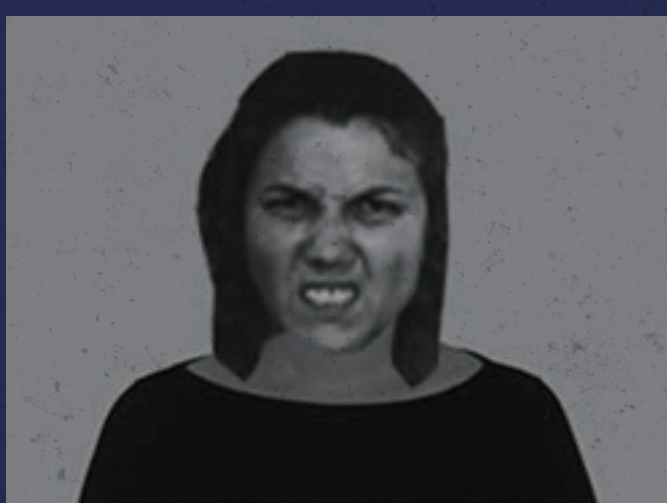
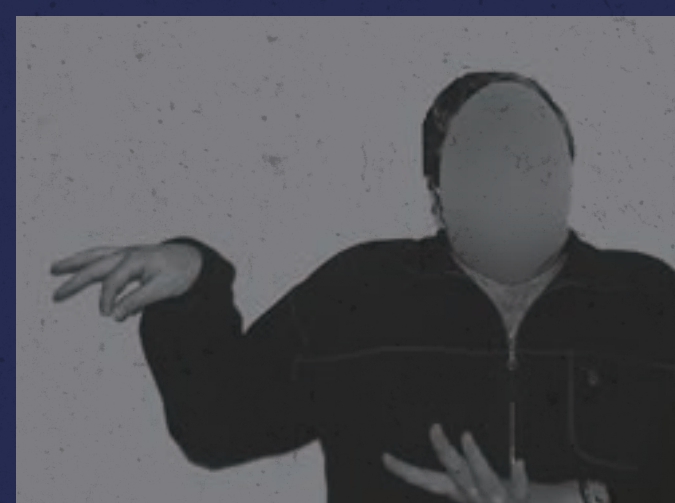
Participants demonstrated a significantly greater tendency to categorize the incongruent compounds according to the emotion conveyed by the bodily cues. However, the current study did not support the hypothesis that the HA group had a greater preference for bodily cues compared to the LA group. Additionally, both groups exhibited comparable response latency when labeling incongruent face-body compounds. Incongruent alignments might have been profoundly ambiguous, requiring both groups to take longer to make the decisions; or that bodily expressions are exceptionally unambiguous, leading both groups to rely on bodily information equally.

## CONCLUSION

In summary, given no temporal constraint, individuals with alexithymia show comparable accuracy in labeling the emotions of facial expressions, bodily expressions, and congruent face-body compounds. This finding supports the hypothesis that alexithymic individuals primarily struggle with processing the perceptual properties of emotional stimuli. Importantly, they achieve this level of accuracy without experiencing longer reaction times, except when it comes to labeling facial expressions. This suggests that there may not necessarily be a tradeoff between accuracy and reaction time for individuals with alexithymia. Moreover, these individuals do not exhibit a greater inclination to categorize incongruent face-body compounds as the emotion conveyed by the body. This implies that they do not have a stronger preference for bodily cues over facial cues during affective processing. However, it is important to note that the limited variety of bodily expressions tested in the current study may have influenced these results, possibly due to familiarity with the stimuli.

**Therefore, further investigation with a more rigorous design is recommended.**

## What are these people feeling?



If they feel disgust,



and they are angry,



## How about this person?

#### References

- Bermond, B., Vorst, H. C. M., Vingerhoets, A. J. J. M., & Gerritsen, W. (1999). The amsterdam alexithymia scale: Its psychometric values and correlations with other personality traits. *Psychotherapy and Psychosomatics*, 68(5), 241-251. <https://doi.org/10.1159/000012340>
- Chen, Z., & Whitney, D. (2022). Inferential emotion tracking (IET) reveals the critical role of context in emotion recognition. *Emotion (Washington, D.C.)*, 22(6), 1185-1192. <https://doi.org/10.1037/em0000934>
- Thme, K., Sacher, J., Lichev, V., Rosenberg, N., Kugel, H., Rufer, M., Grabe, H. J., Pampel, A., Lepsius, J., Kersting, A., Villringer, A., & Suslow, T. (2014a). Alexithymia and the labeling of facial emotions: Response slowing and increased motor and somatosensory processing. *BMC Neuroscience*, 15(1), 40. <https://doi.org/10.1186/1471-2202-15-40>
- Thme, K., Sacher, J., Lichev, V., Rosenberg, N., Kugel, H., Rufer, M., Grabe, H., Pampel, A., Lepsius, J., Kersting, A., Villringer, A., Lane, R. D., & Suslow, T. (2014b). Alexithymic features and the labeling of brief emotional facial expressions - an fMRI study. *Neuropsychologia*, 64, 289-299. <https://doi.org/10.1016/j.neuropsychologia.2014.09.044>
- Leitzke, B. T., & Pollak, S. D. (2016). Developmental changes in the primacy of facial cues for emotion recognition. *Developmental Psychology*, 52(4), 572-581. <https://doi.org/10.1037/a0040067>
- Maiorana, N., Dini, M., Poletti, B., Tagini, S., Reitano, M. R., Pravettoni, G., Priori, A., & Ferrucci, R. (2022). The effect of surgical masks on the featural and configural processing of emotions. *International Journal of Environmental Research and Public Health*, 19(4), 2420. <https://doi.org/10.3390/ijerph19042420>