

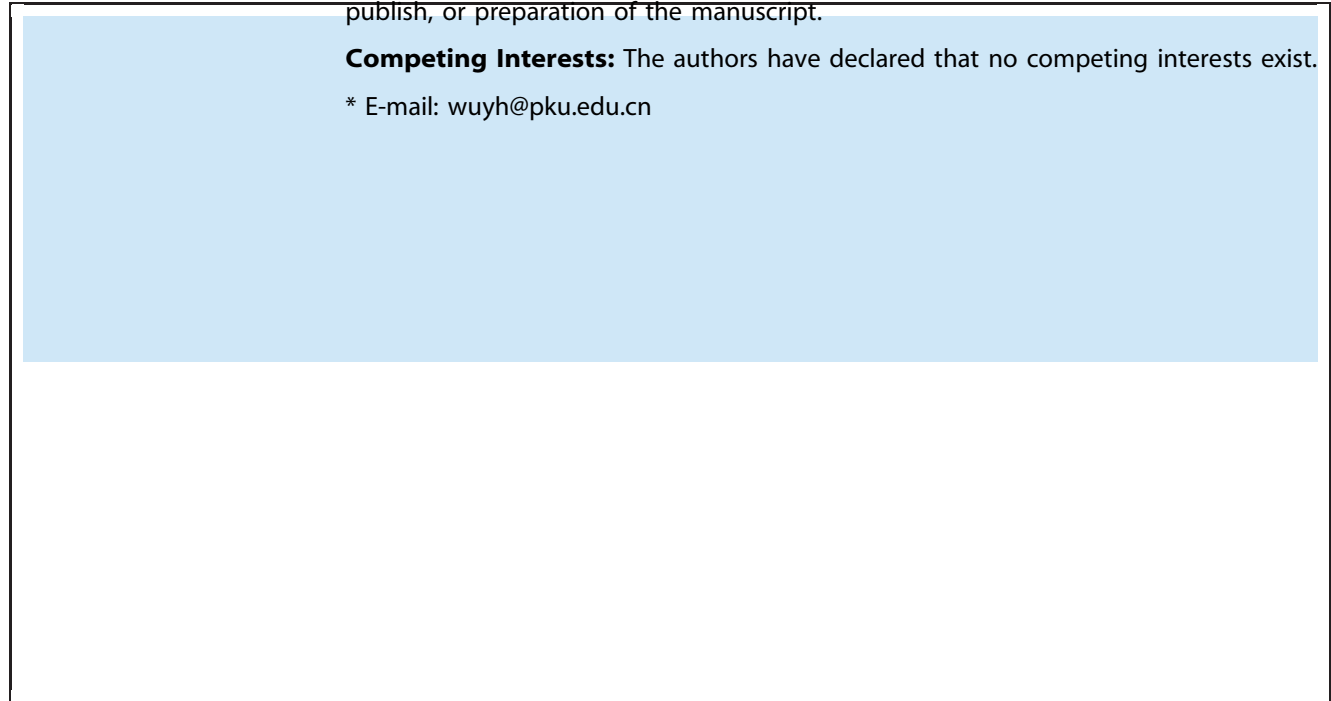
# Gender Difference of Unconscious Attentional Bias in High Trait Anxiety Individuals

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## Introduction

Generalized Anxiety Disorder (GAD) is a common anxiety disorder characterized by excessive, uncontrollable worry about a variety of events or activities. It is associated with significant functional impairment and is a leading cause of disability. The prevalence of GAD is approximately 5% in the general population. The pathogenesis of GAD is complex, involving genetic, environmental, and psychological factors. The disorder is often comorbid with other anxiety disorders, such as panic disorder and agoraphobia. The clinical presentation of GAD includes persistent and excessive worry, restlessness, fatigue, difficulty concentrating, irritability, muscle tension, and sleep disturbance. The diagnosis of GAD is based on the presence of at least six of these symptoms, with at least one being excessive worry. The disorder is typically treated with cognitive-behavioral therapy (CBT) and/or pharmacotherapy, such as selective serotonin reuptake inhibitors (SSRIs).

Individuals with high trait anxiety (HTA) exhibit a heightened state of arousal and are more susceptible to stressors. This heightened state of arousal is thought to be related to an unconscious attentional bias towards threat-related stimuli. This bias is characterized by a faster and more automatic orientation of attention towards threat-related stimuli, which is thought to be a result of the heightened state of arousal. This bias is thought to be a result of the heightened state of arousal, which is thought to be related to the activation of the amygdala, a brain region involved in processing emotional information. The activation of the amygdala is thought to lead to a faster and more automatic orientation of attention towards threat-related stimuli, which is thought to be a result of the heightened state of arousal. This bias is thought to be a result of the heightened state of arousal, which is thought to be related to the activation of the amygdala, a brain region involved in processing emotional information. The activation of the amygdala is thought to lead to a faster and more automatic orientation of attention towards threat-related stimuli, which is thought to be a result of the heightened state of arousal.

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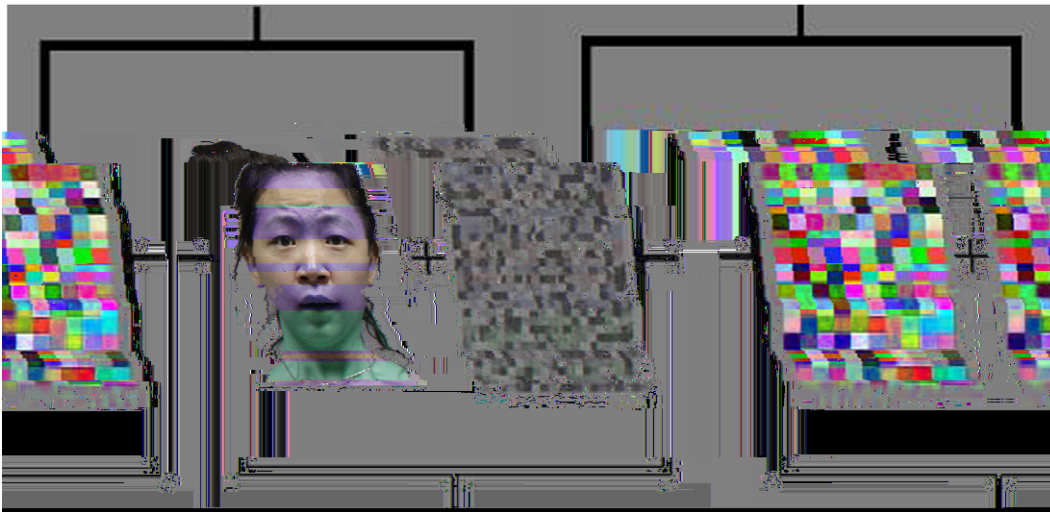
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**Figure 1. A sample stimulus in the invisible condition.** The left image was presented to the non-dominant eye and the right image was presented to the dominant eye.  
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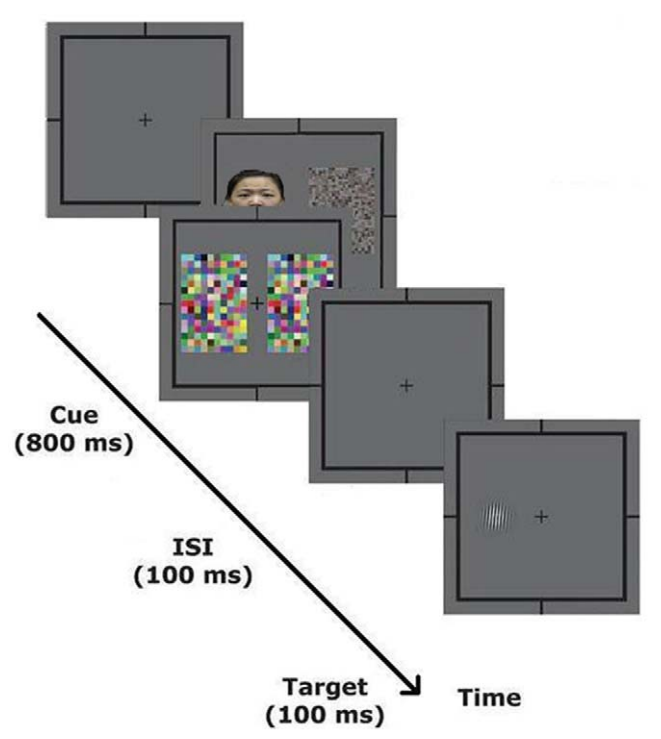
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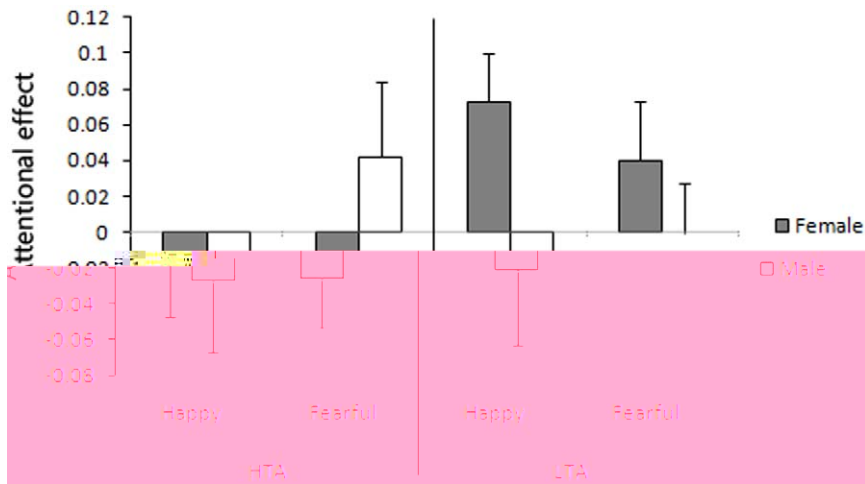
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**Results**  
**Visible condition.** A  
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(F (1, 44) = 3.75, p = 0.059),  
**Invisible condition.** A  
H A L A, F, 4.  
A 2 ( )x2 ( )x2 ( )  
, A A  
(F (1, 44) = 6.59, p = 0.014),  
(F (1, 44) = 4.77, p = 0.034), (F (1,



**Figure 2. A schematic description of the experimental procedure in the invisible condition.**  
doi:10.1371/journal.pone.0020305.g002



**Figure 3. Attention bias and avoidance by happy and fearful faces in the visible condition.** The results indicated no significant main effect or interaction. Error bars denote 1 SEM calculated across subjects. doi:10.1371/journal.pone.0020305.g003

2 ( ) × 2 ( ) A A H A  
 L A, H A, (F (1, 22) = 5.35,  $p = 0.031$ ), L A, (F (1, 22) = 1.89,  $p = 0.183$ ). I H A, (F (1, 22) = 4.11,  $p = 0.055$ ). A H A, ( (11) = 2.66,  $p = 0.022$ ). I H A, ( (11) = 2.01,  $p = 0.069$ ).

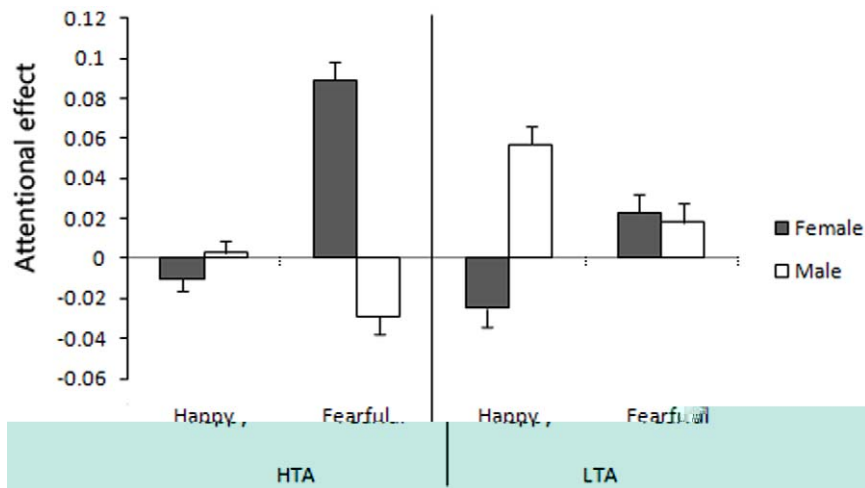
**Methods**

**Participant.**

**Stimuli and Procedure.**

**Experiment 2**

I E 1, H A (12



**Figure 4. Attention bias and avoidance by happy and fearful faces in the invisible condition.** The results indicated a gender difference of

**Table 2.** STAI-TAI scores of female and male participants in HTA group and T-Test between two genders.

	Female	Male	t	P
HTA	52.83(9.77)	52.83(6.64)	0.00	1.00

doi:10.1371/journal.pone.0020305.t002

**Design.**

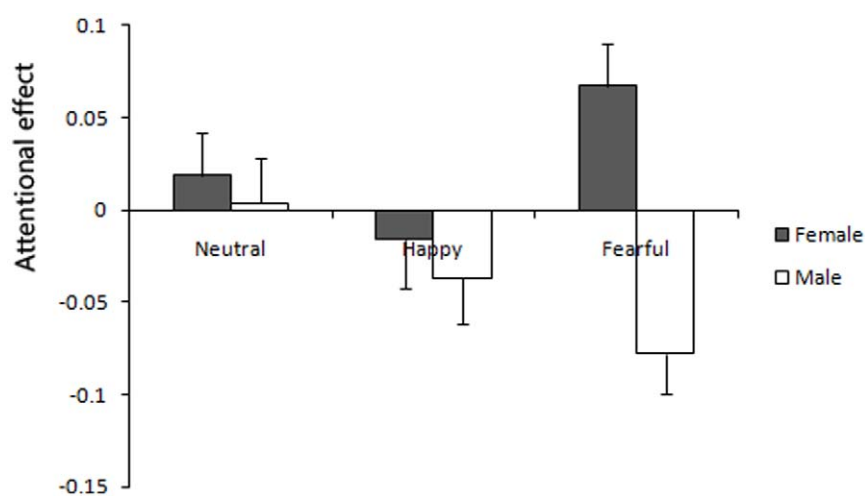
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**Results**

H A , F , 5. A 2 ( / ) × 3  
 ( / / ) - , A A  
 ( F ( 2 , 33 ) = 5.6 , p = 0.008 ) ,  
 ( F ( 1 , 34 ) = 8.62 , p = 0.006 ) . A  
 ( ( 17 ) = 2.89 , p = 0.01 ) ,  
 ( ( 17 ) = - 3.75 , p = 0.002 ) .  
 H A  
 . A , ( F , 5 ) .

**Discussion**

H A , H A  
 H A



**Figure 5. Attention bias and avoidance by neutral, happy and fearful faces in the invisible condition.** Female participants exhibited attentional bias to fearful faces, while male participants exhibited attentional avoidance of fearful faces. This result supported that there was gender difference in HTA population. Additionally, we did not find attentional effects by both neutral and happy faces. Error bars denote 1 SEM calculated across subjects.

doi:10.1371/journal.pone.0020305.g005

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H A L A

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**Author Contributions**

C : J Z G. A : J Z C  
 FF. / / : J Z : J Z  
 FF.

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