

APCG2013, December 2

Parallel Session 2C: Gambling Behavior and Cognition

**Development and validity of the new gambling task  
“Game of Dice Task–Revision (GDT–R)”**

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# Self-Introduction

Takuhiro Takada, M.A. (Psychology)

Graduate student of University of Tsukuba, Japan

Main theme: Gambling Behavior, Affect, Perceived-Luck

*Especially, my research focused on **gambling behaviors on human beings**, and did some experimental studies.*



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## ■ Experiment 1

*- purpose, method, result, discussion*

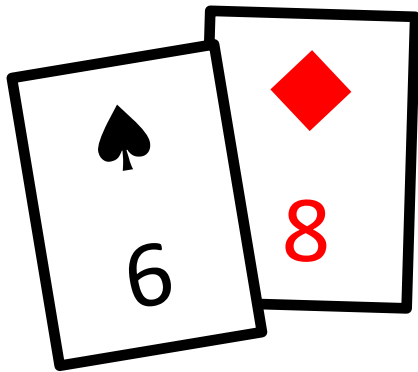
## ■ Experiment 2

*- purpose, method, result, discussion*

## ■ Summary and Conclusion

# Background

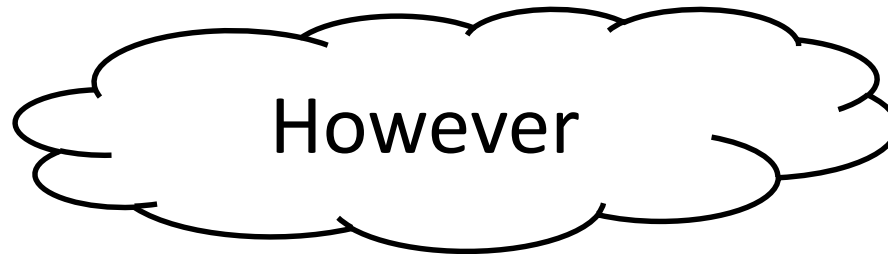
Various types of gambling tasks have been used for investigating gambling behavior.



⇒ Experimental research is important to understand the mechanisms of gambling behavior.

# The problem of other gambling task

These tasks can measure only **a few aspects** of gambling behavior each of these tasks.



There are many aspects of gambling behaviors in reality scene.

# The purpose of this study

In this study, we developed a new gambling task, **the Game of Dice Task-Revision (GDT-R)** that modified the Game of Dice Task (GDT; Brand et al., 2005).



We conducted two experiments with healthy undergraduates to confirm the validity of the GDT-R.

# Game of Dice Task-Revision (GDT-R)

- ◆ The GDT-R can measure **the risk of gambling, bet, speed, and latency to finish.**
- ◆ Participants can decide “where they select”, “how much they bet”. ( Minimum bet is 10.)
- ◆ The limit of trial number is 100, and participants can exit any time.
- ◆ The GDT-R also measured the speed of gambling.



Throw



bet

SCORE  
1000

Trial  
1

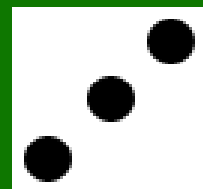
Your Bet   OK

	x 5.4
	x 2.7
	x 1.8
	x 1.35

↑ risk ↓

Select a combination and enter your bet.





**YOU LOSE**

SCORE  
960

Trial  
2

Throw



time

Your Bet

200

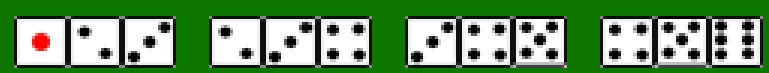
OK



x 5.4



x 2.7



x 1.8



number

To go to the next trial, press the enter key.

**Exit**

# Overview & Purpose (Experiment 1)

## 【Overview】

In experiment 1, participants performed three Gambling Task (GDT-R, Iowa Gambling Task, Roulette).

And after the task, they answered the impression of each task.



The purpose of experiment 1 is to compare the behaviors and the impression of each task.

# Method (Experiment 1)

## ▪ Participants

60 Japanese undergraduates

(29 males, 31 females, mean age was 20.12)

## ▪ Gambling Task

(1) Game of Dice Task-Revision (GDT-R)

(2) Iowa Gambling Task (Bechara et al., 1994)

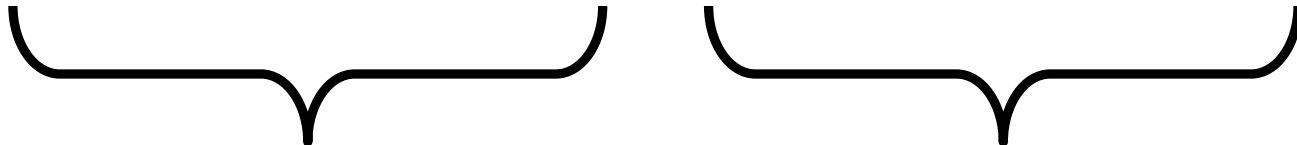
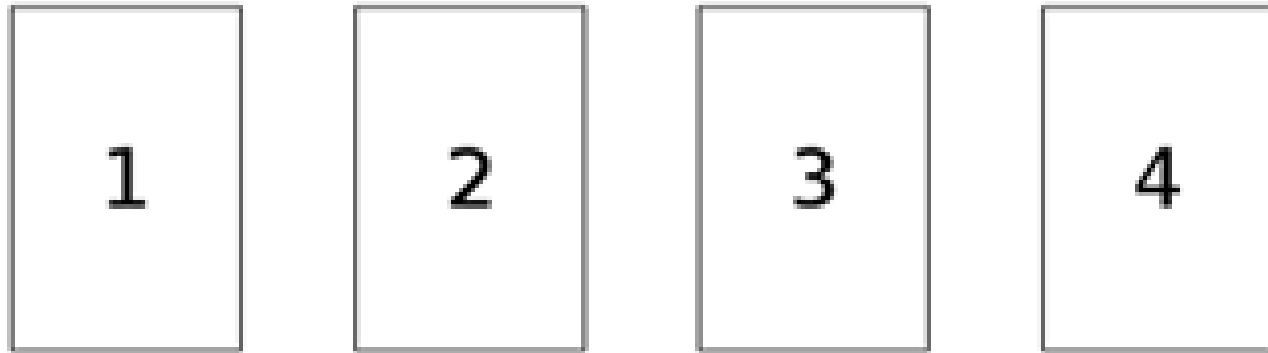
(3) Roulette

## ▪ Measure (the impression of each task)

(1)amusement (2)difficulty (3)tension (4)enthusiasm

(5)confidence (6)concentration (7)retry

# Select deck by clicking with mouse



**High Risk**

Total: \$2000

**Low Risk**



# Method (Experiment 1)

## ▪ Participants

60 Japanese undergraduates  
(29 males, 31 females, mean age was 20.12)

## ▪ Gambling Task

- (1) Game of Dice Task-Revision (GDT-R)
- (2) Iowa Gambling Task (Bechara et al., 1994)
- (3) Roulette



## ▪ Measure (the impression of each task)

- (1)amusement (2)difficulty (3)tension (4)enthusiasm  
(5)confidence (6)concentration (7)retry

		0	00	
1-18	1st12	1	2	3
		4	5	6
EVEN	1st12	7	8	9
		10	11	12
RED	2nd12	13	14	15
		16	17	18
BLACK	2nd12	19	20	21
		22	23	24
ODD	3rd12	25	26	27
		28	29	30
19-36	3rd12	31	32	33
		34	35	36

Type of bet	Chance of winning	Payout
One-number bet	1/38	35:1
Two-number bet	2/38	17:1
Three-number bet	3/38	11:1
Four-number bet	4/38	8:1
Six-number bet	6/38	5:1
Columns	12/38	2:1
Dozens	12/38	2:1
1-18, 18-36	18/38	1:1
Red, Black	18/38	1:1
Odd, Even	18/38	1:1

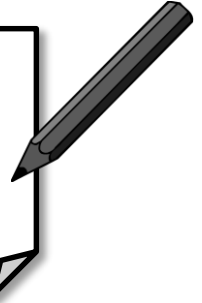
⊠ First capital ▪ ▪ ▪ 1000, Minimum bet ▪ ▪ ▪ 10,  
Limit of trial number ▪ ▪ ▪ 20

# Procedure (Experiment 1)

Gambling Task ①



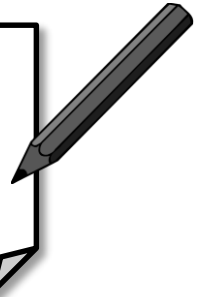
Impression



Gambling Task ②



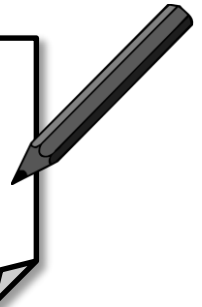
Impression



Gambling Task ③



Impression



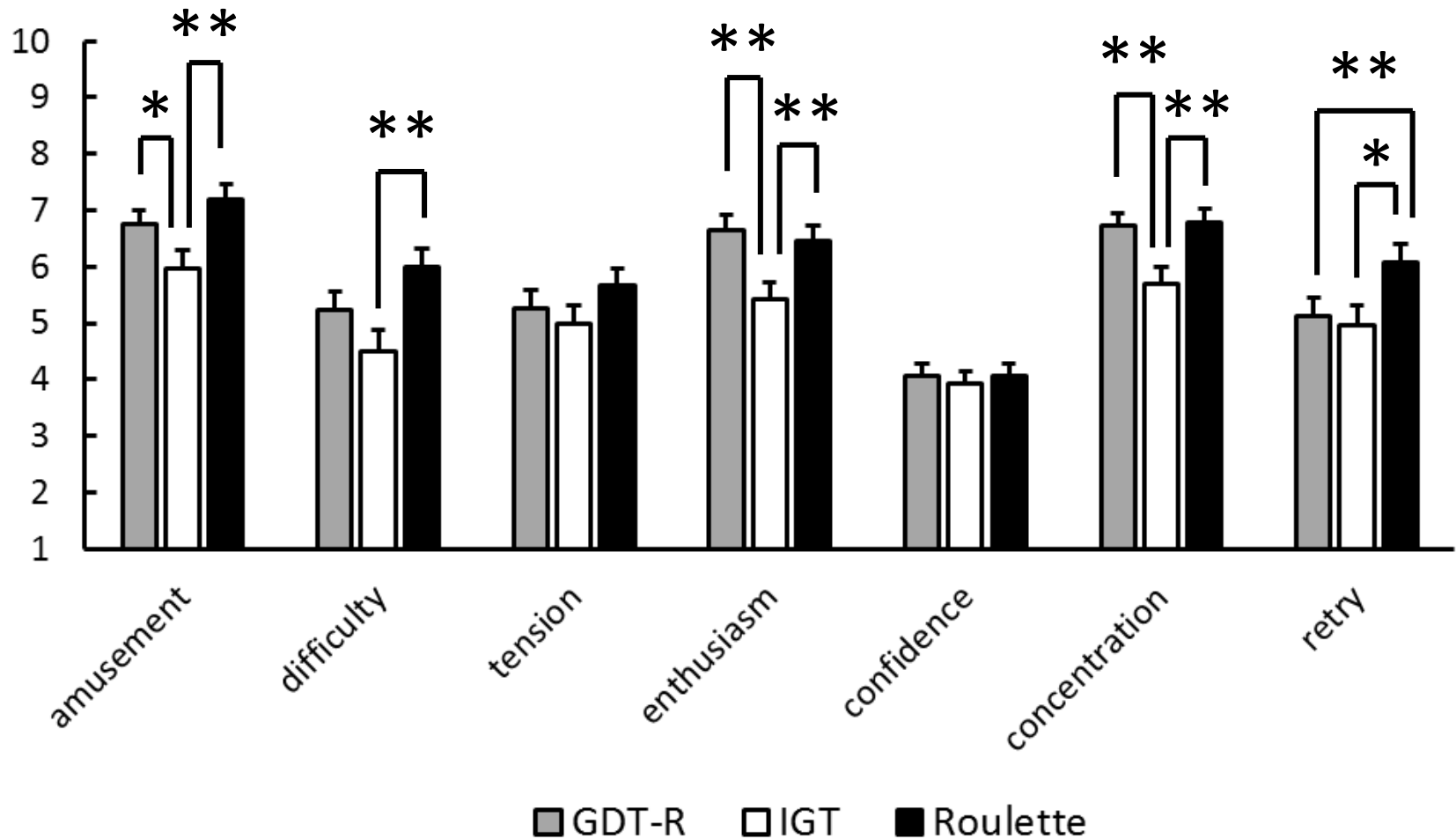
# Result (Experiment 1)

## ◇ Descriptive Statistics ( $N = 60$ )

	GDT-R		IGT		Roulette	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
final outcome	585.30	469.77	820.42	636.55	968.83	444.81
risk	1.97	0.77	1.52	0.10	1.68	0.59
bet	66.21	41.58			62.08	52.93
number	50.12	33.39			15.75	5.54
time	13.38	11.44				
Select Exit	32		————		25	
Tried to a limit	13		————		33	
Run out of money	15		————		2	

# Result (Experiment 1)

◇ The impression of each task



# Result (Experiment 1)

## ◇ Correlations of behaviors

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		GDT-R			
		risk	bet	number	time
	risk	.60 **	.17	-.06	-.02
Roulette	bet	.21	.47 **	-.08	.40 **
	number	.05	-.11	.49 **	-.46 **

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✂ \*\*  $p < .01$ , \*  $p < .05$

✂ There was no significant correlation between performances on the GDT-R and IGT(risk).

# Discussion (Experiment 1)

Participants behaved similarly and had similar impressions on the GDT-R and Roulette.

It seems that the GDT-R is the task that resembles the reality scene.

Whereas, there was no significant correlation between performances on the GDT-R and IGT.

It is consistent with the findings of previous studies that used GDT (Brand et al., 2005).

# Overview & Purpose (Experiment 2)

## 【Overview】

In experiment 2, participants performed the GDT-R, and we assessed their emotional states and perceived-luck before the first trial and after every trial.



The purpose of experiment 2 is to replicate the findings of previous studies that used another gambling task.

# Method (Experiment 2)

- **Participants**

30 Japanese undergraduates  
(14 males, 16 females, mean age was 18.97)

- **Measure (affect)**

Affect Grid (Russell et al., 1989)

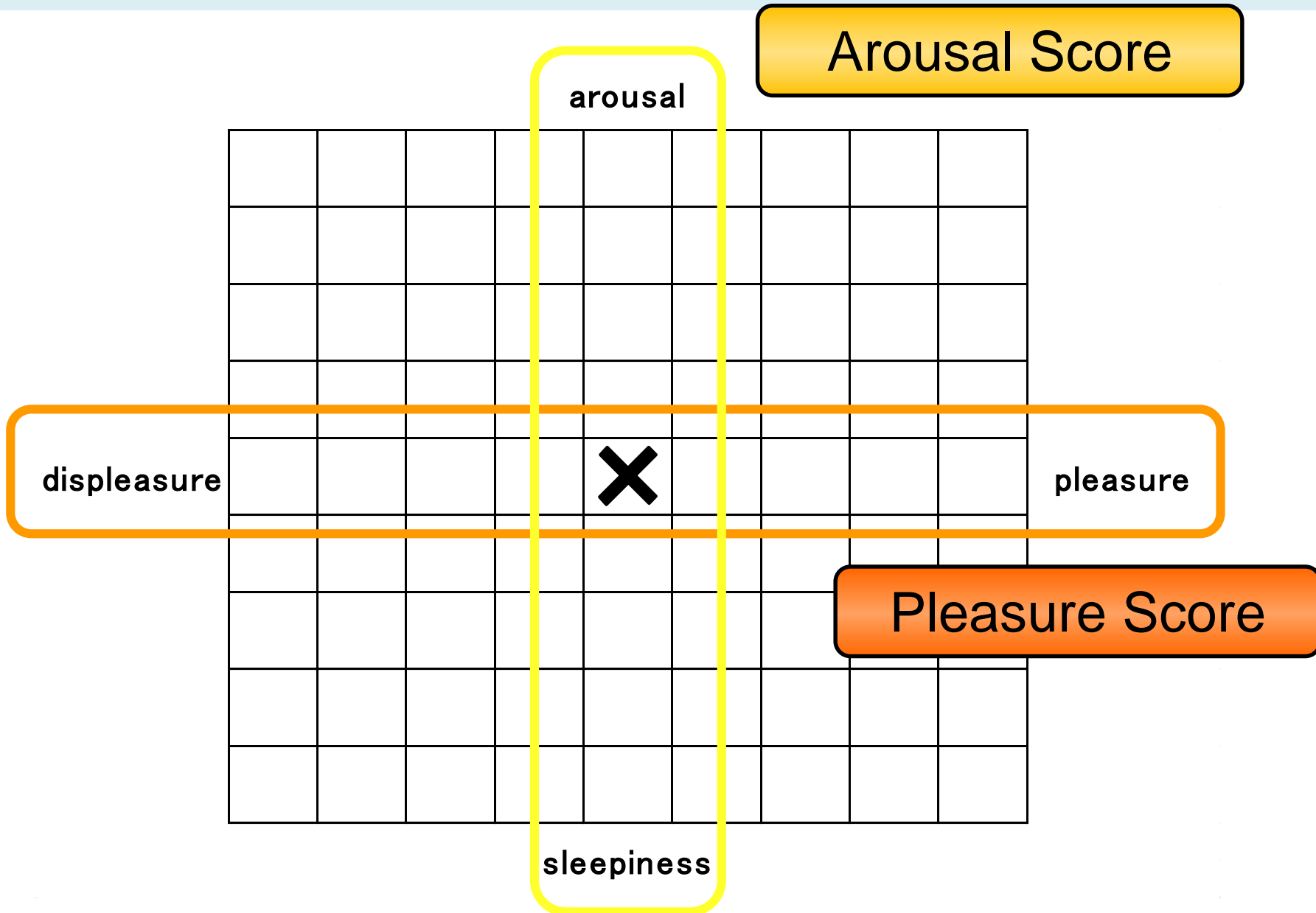
- **Measure (perceived-luck)**

1-item scale (How much do you think you are lucky of now?)  
from -5 (bad luck) to +5 (good luck)

- **Gambling Task**

Game of Dice Task-Revision (GDT-R)

# Affect Grid (Russell et al., 1989)



# Method (Experiment 2)

- **Participants**

30 Japanese undergraduates  
(14 males, 16 females, mean age was 18.97)

- **Measure (affect)**

Affect Grid (Russell et al., 1989)

- **Measure (perceived-luck)**

1-item scale (How much do you think you are lucky of now?)  
from -5 (bad luck) to +5 (good luck)



Luck score

- **Gambling Task**

Game of Dice Task-Revision (GDT-R)

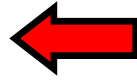
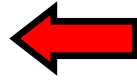
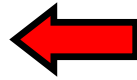
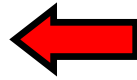
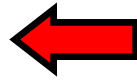
# Procedure (Experiment 2)

**GDT-R: trial 1**

**GDT-R : trial 2**

⋮

**GDT-R : last trial**



**Affect Grid,  
Perceived-Luck**

# Result (Experiment 2)

## ◇ Descriptive Statistics ( $N = 30$ )

	<i>M</i>	<i>SD</i>
final outcome	456.70	486.31
risk	1.81	0.59
bet	75.55	59.46
number	61.20	29.97
time	13.30	5.42
pleasure score	4.96	0.82
arousal score	5.68	1.19
luck score	-0.26	0.81

Select Exit	12
Tried to a limit	8
Run out of money	10

# Analysis (pleasure, arousal, luck)

- *t*-test (Independent variable: winning versus losing)

Dependent variable: the sift size of each score

(Ex)

Trial 1 Pleasure score : 5

Trial 2 Pleasure score : 6

Trial 3 Pleasure score : 5

Became more positive

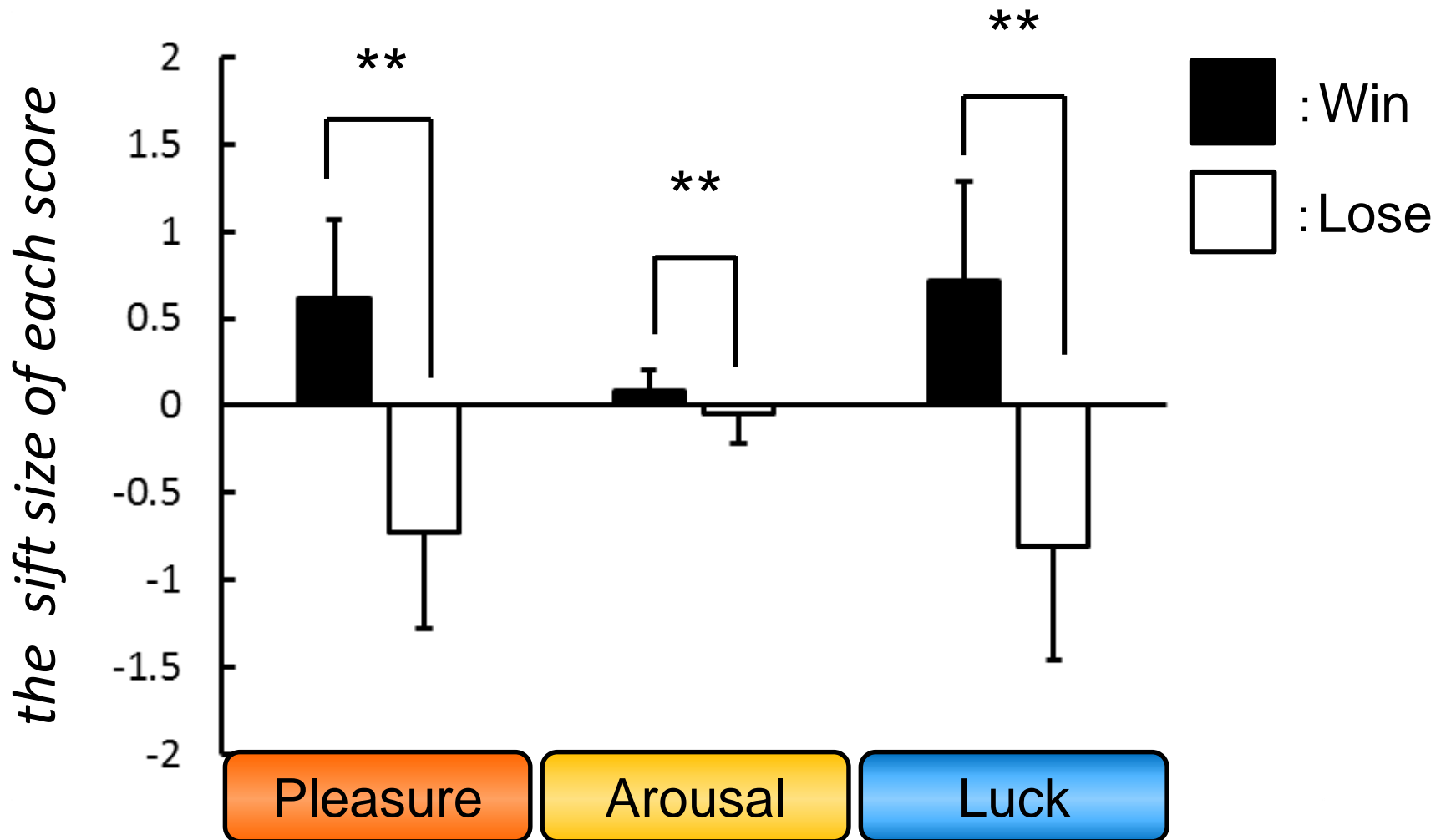
Sift size : + 1

Became more negative

Sift size : - 1

# Result (Experiment 2)

◇ The effect of **winning versus losing** ( $N = 30$ )



# Discussion (Experiment 2)

Results indicated that after participants experienced wins, compared to losses, their emotional state became more positive and aroused, and their perceived-luck increased.



These findings are consistent with the findings of previous studies that used another gambling task.

# Summary and Conclusion

★ The findings of experiment 1 revealed that GDT-R is the task that resembles a reality scene.

★ The findings of experiment 2 revealed that emotional states and perceived-lucks when conducting GDT-R was same with the previous studies.



The utility of the GDT-R is  
explored!

# Thank you!

※ This study was supported by the 2012 research grant from the Council for Addiction Behavior Studies.

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