

The interaction of modified numerals and QUDs (replication study originally by Westera and Adrian Brasoveanu (2014))

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## Experimental materials:

### Items:

#### Condition 1 (POLAR - SUP)

Item 1:

Q: Did you find at most ten of the coins in the wallet?

A: I | found | at | most | ten | of | the | coins | in | the | wallet.

I: The witness doesn't know exactly how many of the coins she found in the wallet.

Item 2:

Q: Did you find at most ten of the pills in the bag?

A: I | found | at | most | ten | of | the | pills | in | the | bag.

I: The witness doesn't know exactly how many of the pills she found in the bag.

Item 3:

Q: Did you hear at most ten of the shots coming from the school shooting?

A: I | heard | at | most | ten | of | the | shots | coming | from | the | school | shooting.

I: The witness doesn't know exactly how many of the shots she heard coming from the school shooting.

Item 4:

Q: Did you see at most ten of the robbers in front of the bank?

A: I | saw | at | most | ten | of | the | robbers | in | front | of | the | bank.

I: The witness doesn't know exactly how many of the robbers she saw in front of the bank.

Item 5:

Q: Did you see at most ten of the bills in the purse?

A: I | saw | at | most | ten | of | the | bills | in | the | purse.

I: The witness doesn't know exactly how many of the bills she saw in the purse.

Item 6:

Q: Did you find at most ten of the shot glasses on the kitchen counter?

A: I | found | at | most | ten | of | the | shot | glasses | on | the | kitchen | counter.

I: The witness doesn't know exactly how many of the shot glasses she found on the kitchen counter.

## **Condition 2 (POLAR - COMP)**

Item 1:

Q: Did you find less than ten of the coins in the wallet?

A: I | found | less | than | ten | of | the | coins | in | the | wallet.

I: The witness doesn't know exactly how many of the coins she found in the wallet.

Item 2:

Q: Did you find less than ten of the pills in the bag?

A: I | found | less | than | ten | of | the | pills | in | the | bag.

I: The witness doesn't know exactly how many of the pills she found in the bag.

Item 3:

Q: Did you hear less than ten of the shots coming from the school shooting?

A: I | heard | less | than | ten | of | the | shots | coming | from | the | school | shooting.

I: The witness doesn't know exactly how many of the shots she heard coming from the school shooting.

Item 4:

Q: Did you see less than ten of the robbers in front of the bank?

A: I | saw | less | than | ten | of | the | robbers | in | front | of | the | bank.

I: The witness doesn't know exactly how many of the robbers she saw in front of the bank.

Item 5:

Q: Did you see less than ten of the bills in the purse?

A: I | saw | less | than | ten | of | the | bills | in | the | purse.

I: The witness doesn't know exactly how many of the bills she saw in the purse.

Item 6:

Q: Did you find less than ten of the shot glasses on the kitchen counter?

A: I | found | less | than | ten | of | the | shot | glasses | on | the | kitchen | counter.

I: The witness doesn't know exactly how many of the shot glasses she found on the kitchen counter.

### **Condition 3 (WHAT - SUP)**

Item 1:

Q: What did you find in the wallet?

A: I | found | at | most | ten | of | the | coins | in | the | wallet.

I: The witness doesn't know exactly how many of the coins she found in the wallet.

Item 2:

Q: What did you find in the bag?

A: I | found | at | most | ten | of | the | pills | in | the | bag.

I: The witness doesn't know exactly how many of the pills she found in the bag.

Item 3:

Q: What did you hear coming from the school shooting?

A: I | heard | at | most | ten | of | the | shots | coming | from | the | school | shooting.

I: The witness doesn't know exactly how many of the shots she heard coming from the school shooting.

Item 4:

Q: What did you see in front of the bank?

A: I | saw | at | most | ten | of | the | robbers | in | front | of | the | bank.

I: The witness doesn't know exactly how many of the robbers she saw in front of the bank.

Item 5:

Q: What did you see in the purse?

A: I | saw | at | most | ten | of | the | bills | in | the | purse.

I: The witness doesn't know exactly how many of the bills she saw in the purse.

Item 6:

Q: What did you see on the kitchen counter?

A: I | saw | at | most | ten | of | the | shot | glasses | on | the | kitchen | counter.

I: The witness doesn't know exactly how many of the shot glasses she saw on the kitchen counter.

#### **Condition 4 (WHAT - COMP)**

Item 1:

Q: What did you find in the wallet?

A: I | found | less | than | ten | of | the | coins | in | the | wallet.

I: The witness doesn't know exactly how many of the coins she found in the wallet.

Item 2:

Q: What did you find in the bag?

A: I | found | less | than | ten | of | the | pills | in | the | bag.

I: The witness doesn't know exactly how many of the pills she found in the bag.

Item 3:

Q: What did you hear coming from the school shooting?

A: I | heard | less | than | ten | of | the | shots | coming | from | the | school | shooting.

I: The witness doesn't know exactly how many of the shots she heard coming from the school shooting.

Item 4:

Q: What did you see in front of the bank?

A: I | saw | less | than | ten | of | the | robbers | in | front | of | the | bank.

I: The witness doesn't know exactly how many of the robbers she saw in front of the bank.

Item 5:

Q: What did you see in the purse?

A: I | saw | less | than | ten | of | the | bills | in | the | purse.

I: The witness doesn't know exactly how many of the bills she saw in the purse.

Item 6:

Q: What did you see on the kitchen counter?

A: I | saw | less | than | ten | of | the | shot | glasses | on | the | kitchen | counter.

I: The witness doesn't know exactly how many of the shot glasses she saw on the kitchen counter.

#### **Condition 5 (HOWMANY - SUP)**

Item 1:

Q: How many of the coins did you find in the wallet?

A: I | found | at | most | ten | of | the | coins | in | the | wallet.

I: The witness doesn't know exactly how many of the coins she found in the wallet.

Item 2:

Q: How many of the pills did you find in the bag?

A: I | found | at | most | ten | of | the | pills | in | the | bag

I: The witness doesn't know exactly how many of the pills she found in the bag.

Item 3:

Q: How many of the shots did you hear coming from the school shooting?

A: I | heard | at | most | ten | of | the | shots | coming | from | the | school | shooting.

I: The witness doesn't know exactly how many of the shots she heard coming from the school shooting.

Item 4:

Q: How many of the robbers did you see in front of the bank?

A: I | saw | at | most | ten | of | the | robbers | in | front | of | the | bank.

I: The witness doesn't know exactly how many of the robbers she saw in front of the bank.

Item 5:

Q: How many of the bills did you see in the purse?

A: I | saw | at | most | ten | of | the | bills | in | the | purse.

I: The witness doesn't know exactly how many of the bills she saw in the purse.

Item 6:

Q: How many of the shot glasses did you see on the kitchen counter?

A: I | saw | at | most | ten | of | the | shot | glasses | on | the | kitchen | counter.

I: The witness doesn't know exactly how many of the shot glasses she saw on the kitchen counter.

## **Condition 6 (HOWMANY - COMP)**

Item 1:

Q: How many of the coins did you find in the wallet?

A: I | found | less | than | ten | of | the | coins | in | the | wallet.

I: The witness doesn't know exactly how many of the coins she found in the wallet.

Item 2:

Q: How many of the pills did you find in the bag?

A: I | found | less | than | ten | of | the | pills | in | the | bag.

I: The witness doesn't know exactly how many of the pills she found in the bag.

Item 3:

Q: How many of the shots did you hear coming from the school shooting?

A: I | heard | less | than | ten | of | the | shots | coming | from | the | school | shooting.

I: The witness doesn't know exactly how many of the shots she heard coming from the school shooting.

Item 4:

Q: How many of the robbers did you see in front of the bank?

A: I | saw | less | than | ten | of | the | robbers | in | front | of | the | bank.

I: The witness doesn't know exactly how many of the robbers she saw in front of the bank.

Item 5:

Q: How many of the bills did you see in the purse?

A: I | saw | less | than | ten | of | the | bills | in | the | purse.

I: The witness doesn't know exactly how many of the bills she saw in the purse.

Item 6:

Q: How many of the shot glasses did you find on the kitchen counter?

A: I | found | less | than | ten | of | the | shot | glasses | on | the | kitchen | counter.

I: The witness doesn't know exactly how many of the shot glasses she found on the kitchen counter.

## **Fillers:**

### **Condition 1 (POLAR - SUP)**

Filler 1: OI

Q: Did you see at most ten of the bread slices on the kitchen counter?

A: I | saw | at | most | ten | of | the | bread | slices | on | the | kitchen | counter.

I: The witness considers it possible that she saw ten of the bread slices on the kitchen counter.

Filler 2: plau

Q: Did you see at most ten of the balloons flying in the air?

A: I | saw | only | at | most | ten | of | the | balloons | flying | in | the | air.

I: The witness thinks the number of the balloons she saw in the air is comparably low.

Filler 3: OI

Q: Did you find at most ten corpses in the office?

A: I | found | at | most | ten | corpses | in | the | office.

I: The witness considers it possible that they saw eleven corpses at the office.

Filler 4: implau

Q: Did you find at most ten children while trying to escape the fire?

A: I | found | at | most | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children they found trying to escape the fire is comparably high.

Filler 5: implau

Q: Did you hear at most ten women shouting at this event?

A: I | heard | at | most | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably high.

Filler 6: OV

Q: Did you certainly hear at most ten animals howling in the forest?

A: I | heard | at | most | ten | animals | howling | in | the | forest.

I: The witness considers it possible that she heard nine animals howling in the forest.

Filler 7: OV

Q: Did you find at most ten of the lollipops in the drawer?

A: I | found | at | most | ten of | the | lollipops | in | the | drawer.

I: The witness considers it possible that she found ten of the lollipops in the drawer.

Filler 8: OI

Q: Did you approximately find at most ten pictures of the assault in the locker?

A: I | found | at | most | ten | pictures | of | the | assault | in | the | locker.

I: The witness considers it possible that she saw 11 pictures of the assault in the locker.

Filler 9: implau

Q: Did you certainly see at most ten drug addicts at the party?

A: I | saw | at | most | ten | drug | addicts | at | the | party.

I: The witness thinks the number of drug addicts she saw at the party is comparably high.

## **Condition 2 (POLAR - COMP)**

Filler 1: OV

Q: Did you approximately see less than ten of the bread slices on the kitchen counter?

A: I | saw | less | than | ten | of | the | bread | slices | on | the | kitchen | counter.

I: The witness considers it possible that she saw nine of the bread slices on the kitchen counter.

Filler 2: implau

Q: Did you only see less than ten of the balloons flying in the air?

A: I | saw | less | than | ten | of | the | balloons | flying | in | the | air.

I: The witness thinks that the number of the balloons she saw flying in the air is considerably high.

Filler 3: OI

Q: Did you certainly find less than ten corpses in the office?

A: I | found | less | than | ten | corpses | in | the | office.

I: The witness considers it possible that she saw eleven corpses at the office.

Filler 4: implau

Q: Did you certainly find less than ten children while trying to escape the fire?

A: I | only | found | less | than | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children she found trying to escape the fire is comparably high.

Filler 5: implau

Q: Did you hear less than ten women shouting at this event?

A: I | only | heard | less | than | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably high.

Filler 6: OI

Q: Did you hear less than ten animals howling in the forest?

A: I | heard | less | than | ten | animals | howling | in | the | forest.

I: The witness considers it possible that she heard eleven animals howling in the forest.

Filler 7: OI

Q: Did you find nearly less than ten of the lollipops in the drawer?

A: I | found | less | than | ten | of | the | lollipops | in | the | drawer.

I: The witness considers it possible that she found ten of the lollipops in the drawer.

Filler 8: OI

Q: Did you certainly find less than ten pictures of the assault in the locker?

A: I | certainly | found | less | than | ten | pictures | of the | assault | in | the | locker.

I: The witness considers it possible that she saw eleven pictures of the assault in the locker.

Filler 9: plau

Q: Did you see only less than ten drug addicts at the party?



A: I | only | saw | less | than | ten | drug | addicts | at | the | party.

I: The witness thinks the number of drug addicts she saw at the party is comparably low.

### Condition 3 (WHAT - SUP)

Filler 1: plau

Q: What did you certainly see on the kitchen counter?

A: I | saw | at | most | ten | of | the | bread | slices | on | the | kitchen | counter.

I: The witness thinks that the number of bread slices is considerably low.

Filler 2: OV

Q: What did you certainly see flying in the air?

A: I | saw | at | most | ten | of | the | balloons | flying | in | the | air.

I: The witness considers it possible that she saw ten of the balloons flying in the air.

Filler 3: OV

Q: What did you certainly find in the office?

A: I | found | at | most | ten | corpses | in | the | office.

I: The witness considers it possible that she saw nine corpses at the office.

Filler 4: plau

Q: What did you certainly find while trying to escape the fire?

A: I | found | at | most | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children she found trying to escape the fire is comparably low.

Filler 5: plau

Q: What did you approximately hear at this event?

A: I | heard | at | most | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably low.

Filler 6: OV

Q: What did you probably hear in the forest?

A: I | heard | at | most | ten | animals | howling | in | the | forest.

I: The witness considers it possible that she heard ten animals howling in the forest.

Filler 7: OV

Q: What did you probably find in the drawer?

A: I | found | at | most | ten | of | the | lollipops | in | the | drawer.

I: The witness considers it possible that she found ten of the lollipops in the drawer.

Filler 8: OV

Q: What did you certainly find in the locker?

A: I | only | found | at | most | ten | pictures | of | the | assault | in | the | locker.

I: The witness considers it possible that she saw nine pictures of the assault in the locker.

Filler 9: plau

Q: What did you certainly see at the party?

A: I | only | saw | at | most | ten | drug | addicts | at | the | party.

I: The witness thinks the number of drug addicts she saw at the party is comparably low.

#### **Condition 4 (WHAT - COMP)**

Filler 1: implau

Q: What did you certainly see on the kitchen counter?

A: I | saw | less | than | ten | of | the | bread | slices | on | the | kitchen | counter.

I: The witness thinks that the number of the bread slices is considerably high.

Filler 2: plau

Q: What did you probably see flying in the air?

A: I | only | saw | less | than | ten | of | the | balloons | flying | in | the | air.

I: The witness thinks that the number of the balloons flying in the air is considerably low.

Filler 3: OI

Q: What did you certainly find in the office?

A: I | found | less | than | ten | corpses | in | the | office.

I: The witness considers it possible that she saw ten corpses at the office.

Filler 4: implau

Q: What did you find while trying to escape the fire?

A: I | found | less | than | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children she found trying to escape the fire is comparably high.

Filler 5: implau

Q: What did you certainly hear at this event?

A: I | heard | less | than | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably high.

Filler 6: OV

Q: What did you hear in the forest?

A: I | only | heard | less | than | ten | animals | howling | in | the | forest.

I: The witness considers it possible that she heard nine animals howling in the forest.

Filler 7: OI

Q: What did you certainly find in the drawer?

A: I | found | less | than | ten | of | the | lollipops | in | the | drawer.

I: The witness considers it possible that she found eleven of the lollipops in the drawer.

Filler 8: OI

Q: What did you find in the locker?

A: I | only | found | less | than | ten | pictures | of the | assault | in | the | locker.

I: The witness considers it possible that she saw eleven pictures of the assault in the locker.

Filler 9: plau

Q: What did you probably see at the party?

A: I | only | saw | less | than | ten | drug | addicts | at | the | party.

I: The witness thinks that the number of drug addicts she saw at the party is comparably low.

## **Condition 5 (HOWMANY - SUP)**

Filler 1: OV

Q: How many slices of the bread did you approximately see on the kitchen counter?

A: I | saw | at | most | ten | of | the | bread | slices | on | the | kitchen | counter.

I: The witness considers it possible that she saw nine slices of the bread on the kitchen counter.

Filler 2: OI

Q: How many of the balloons did you approximately see flying in the air?

A: I | only | saw | at | most | ten | of | the | balloons | flying | in | the | air.

I: The witness considers it possible that she saw eleven of the balloons flying in the air.

Filler 3: OI

Q: How many corpses did you certainly find in the office?

A: I | found | at | most | ten | corpses | in | the | office.

I: The witness considers it possible that she saw eleven corpses at the office.

Filler 4: implau

Q: How many children did you probably find while trying to escape the fire?

A: I | found | at | most | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children she found trying to escape the fire is comparably high.

Filler 5: plau

Q: How many women did you certainly hear shouting at this event?

A: I | heard | at | most | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably low.

Filler 6: OI

Q: How many animals did you approximately see roaming in the forest?

A: I | saw | at | most | ten | animals | roamin | in | the | forest.

I: The witness considers it possible that she saw eleven animals roaming in the forest.

Filler 7: OI

Q: How many of the lollipops did you certainly find in the drawer?

A: I | found | at | most | ten | of | the | lollipops | in | the | drawer.

I: The witness considers it possible that she found eleven of the lollipops in the drawer.

Filler 8: OV

Q: How many pictures of the assault did you probably find in the locker?

A: I | probably | found | at | most | ten | pictures | of | the | assault | in | the | locker.

I: The witness considers it possible that she saw nine pictures of the assault in the locker.

Filler 9: implau

Q: How many drug addicts did you approximately see at the party?

A: I | saw | at | most | ten | drug | addicts | at | the | party.

I: The witness thinks the number of drug addicts she saw at the party is comparably high.

## **Condition 6 (HOWMANY - COMP)**

Filler 1: implau

Q: How many slices of the bread did you see on the kitchen counter?

A: I | only | saw | less | than | ten | of | the | bread | slices | on | the | kitchen | counter.

I: The witness thinks that the number of the bread slices she saw on the kitchen counter is considerably high.

Filler 2: implau

Q: Approximately how many of the balloons did you see flying in the air?

A: I | saw | less | than | ten | of | the | balloons | flying | in | the | air.

I: The witness thinks that the number of the balloons she saw flying in the air is considerably high.

Filler 3: OI

Q: How many corpses did you certainly find in the office?

A: I | found | less | than | ten | corpses | in | the | office.

I: The witness considers it possible that she saw eleven corpses at the office.

Filler 4: implau

Q: How many children did you approximately find while trying to escape the fire?

A: I | found | less | than | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children she found trying to escape the fire is comparably high.

Filler 5: plau

Q: How many women did you approximately hear shouting at this event?

A: I | heard | less | than | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably low.

Filler 6: OV

Q: How many animals did you see roaming in the forest?

A: I | only | saw | less | than | ten | animals | roaming | in | the | forest.

I: The witness considers it possible that she saw nine animals roaming in the forest.

Filler 7: OI

Q: How many of the lollipops did you probably find in the drawer?

A: I | found | less | than | ten | of | the | lollipops | in | the | drawer.

I: The witness considers it possible that she found eleven of the lollipops in the drawer.

Filler 8: OI

Q: How many pictures of the assault did you find in the locker?

A: I | found | only | less | than | ten | pictures | of the | assault | in | the | locker.

I: The witness considers it possible that she saw eleven pictures of the assault in the locker.

Filler 9: implau

Q: How many drug addicts did you probably see at the party?

A: I | saw | less | than | ten | drug | addicts | at | the | party.

I: The witness thinks the number of drug addicts she saw at the party is comparably high.

### **Condition 7 (DID - SUP)**

Filler 1: OI

Q: Did you only see ten bread slices on the kitchen counter?

A: I | probably | saw | at | most | ten | bread | slices | on | the | kitchen | counter.

I: The witness thinks that it is possible that she saw eleven bread slices on the kitchen counter.

Filler 2 : OI

Q: Did you certainly see ten balloons flying in the air?

A: I | probably | saw | at | most | ten | balloons | flying | in | the | air.

I: The witness considers it possible that she saw eleven balloons flying in the air.

Filler 3: OI

Q: Did you find only ten corpses in the office?

A: I | found | at | most | ten | corpses | in | the | office.

I: The witness considers it possible that she saw eleven corpses at the office.

Filler 4: implau

Q: Did you find children while trying to escape the fire?

A: I | found | at | most | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children they found trying to escape the fire is comparably high.

Filler 5: plau

Q: Did you hear women shouting at this event?

A: I | certainly | heard | at | most | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably low.

Filler 6: plau

Q: Did you certainly see animals roaming in the forest?

A: I | probably | saw | at | most | ten | animals | roaming | in | the | forest.

I: The witness thinks the number of animals she saw roaming in the forest is comparably low.

Filler 7: plau

Q: Did you only find ten lollipops in the drawer?

A: I | found | at | most | ten | lollipops | in | the | drawer.

I: The witness thinks the number of lollipops she found in the drawer is comparably low.

Filler 8: plau

Q: Did you see only ten pictures of the assault in the locker?

A: I | saw | at | most | ten | pictures | of | the | assault | in | the | locker.

I: The witness thinks the number of pictures she saw in the locker is comparably low.

Filler 9: plau

Q: Did you only see ten drug addicts at the party?

A: I | saw | at | most | ten | drug | addicts | at | the | party.

I: The witness thinks the number of drug addicts she saw at the party is comparably low.

### **Condition 8 (DID - COMP)**

Filler 1: plau

Q: Did you approximately see ten bread slices on the kitchen counter?

A: I | saw | probably | less | than | ten | bread | slices | on | the | kitchen | counter.

I: The witness thinks that the number of the bread slices she saw on the kitchen counter is comparably low.

Filler 2: plau

Q: Did you only see ten of the balloons flying in the air?

A: I | probably | saw | less | than | ten | of | the | balloons | flying | in | the | air.

I: The witness thinks that the number of the balloons she saw flying in the air is comparably low.

Filler 3: OV

Q: Did you find only ten corpses in the office?

A: I | found | less | than | ten | corpses | in | the | office.

I: The witness considers it possible that she saw nine corpses at the office.

Filler 4: plau

Q: Did you find children while trying to escape the fire?

A: I | found | less | than | ten | children | while | trying | to | escape | the | fire.

I: The witness thinks the number of children she found trying to escape the fire is comparably low.

Filler 5: plau

Q: Did you hear women shouting at this event?

A: I | heard | less | than | ten | women | shouting | at | this | event.

I: The witness thinks the number of women she heard shouting at this event is comparably low.

Filler 6: OV

Q: Did you see animals roaming in the forest?

A: I | approximately | saw | less | than | ten | animals | roaming | in | the | forest.

I: The witness considers it possible that she heard nine animals roaming in the forest.

Filler 7: OV

Q: Did you only see ten of the lollipops in the drawer?

A: I | saw | less | than | ten | of | the | lollipops | in | the | drawer.

I: The witness considers it possible that she saw nine of the lollipops in the drawer.

Filler 8: OV

Q: Did you only see ten pictures of the assault in the locker?

A: I | saw | less | than | ten | pictures | of the | assault | in | the | locker.

I: The witness considers it possible that she saw nine pictures of the assault in the locker.

Filler 9: plau

Q: Did you see only ten drug addicts at the party?

A: I | saw | less | than | ten | drug | addicts | at | the | party.

I: The witness thinks the number of drug addicts she saw at the party is comparably low.

keys:

OV: obviously valid

OI: obviously invalid

plau: plausible

implau: implausible