

Validation of an affective model:  
A “possible world” model for  
emotional conflict

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... from analysis of a subset  
of the ISEAR Database...

*35% of the causes of **fear** were reported  
as being due to ‘imagination’.  
This proportion was the same  
for low and high emotion intensities.*

*We found several examples of ‘cognitive inconsistency’  
in this subset.*

*No imaginary causes were reported for **joy**.  
No examples of cognitive conflict was found  
in this subset*

*... no data about hope and distress was available* 2

## Examples of emotion-belief conflict from the ISEAR database ('fear')

*"I was coming home from a relative's place and it was about 9.30/10 P.M. I felt slightly apprehensive when I got off the bus and started walking towards my place. I was confident that nothing would happen to me, yet there was this slight feeling of fear."*

*"If I walk alone in the night, It might happen that I will be attacked."*

*I feel fearful, even though I don't believe that it is likely that I will be attacked"*

*"I went up the stairs in a high, dark house full of shadows, passed a door and had the feeling that someone or something was behind me, although I knew I was alone."*

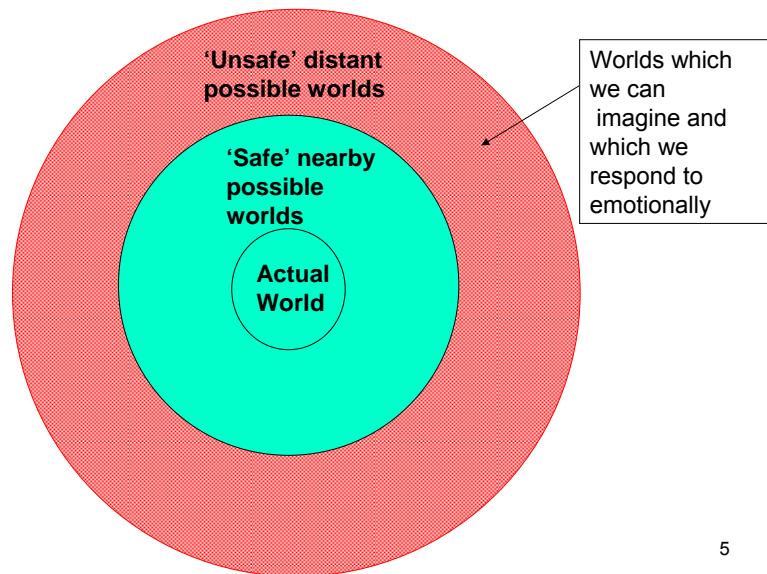
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## Three questions

- Fiorella's first question: Why does it seem that emotion-belief conflict is more common where the emotion is negative – i.e. roughly about something bad or harmful?
- Peter's question: How can these conflicts arise even when we are highly confident or even *know* that we are 'safe'?
- Fiorella's second question: How to operationalise emotion-belief conflict?

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## Answer in terms of possible worlds



## Answering Peter's question

- You believe that you are not in danger. And it is true that you are not in danger.
- And, in fact, you *know* that you are not in danger on recent formulations of modal conditions on knowledge.
  - Technically: your having the true belief that you are not in danger is not 'lucky', because, in most [or all] nearby possible worlds in which you believe you are not in danger, it is true that you are not in danger (Pritchard forthcoming). Formally:  $B(p) \rightarrow p$ . This is known as the 'safety' condition on knowledge. It is distinct from the 'sensitivity' condition,  $\neg p \rightarrow \neg B$  because counterfactuals do not contrapose (Sosa 1999). You would also know you are not in danger on the sensitivity condition.
- Yet there are more distant possible worlds in which you are in danger, and your feeling-laden perception of the actual world is infused with this imagined possibility; the imagining infuses the perception itself (Strawson 1970). Your imagination 'runs away with you'.
- Can you also be certain (feel certain) that you are not in danger and still feel fear? I say yes. If so, Nussbaum is wrong when she optimistically says that 'Emotions ... do go away when the relevant beliefs about the object and about value alter. ... if I am convinced that the wrong did not really take place, or was not really a wrong, my anger will go away' (2001: 131).

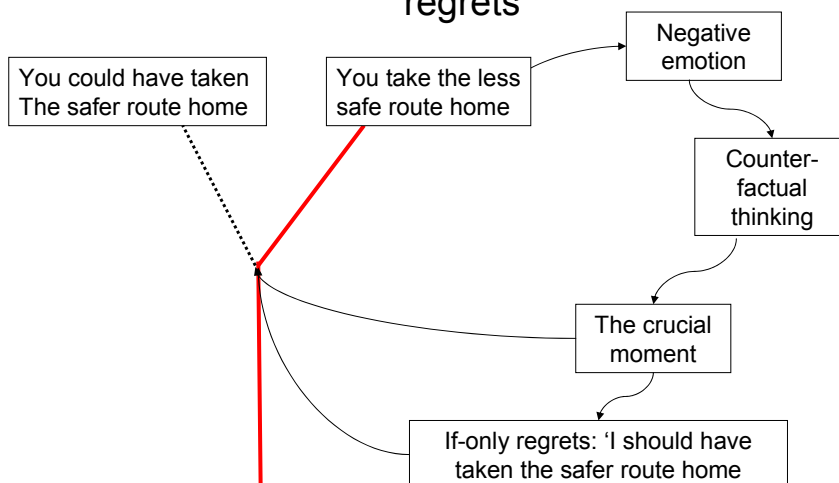
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## Answering Fiorella's first question

- Perhaps emotion-belief conflict with negative emotions has some kind of strategic rationality:
  - Fast and frugal algorithms (Gigerenzer et al 1999), which
  - generate 'false' or misleading emotional responses
- These negative emotions from 'false positives' might lead to evasive action on this or on future occasions
- They might have the effect of 'teaching you a lesson' – e.g. to take the safer route home next time.

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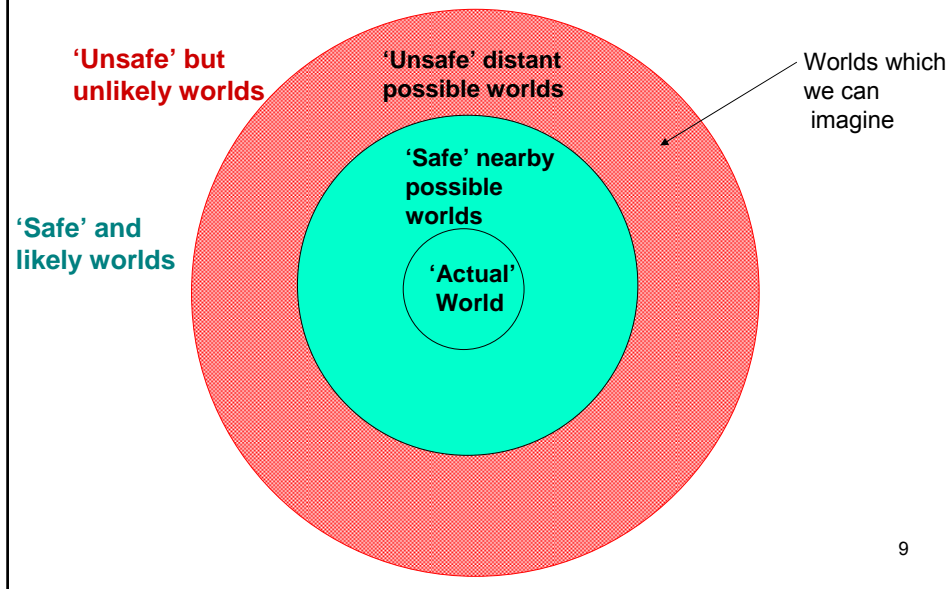
## Connection with counterfactuals and 'if only' regrets



'Negative outcomes [spontaneously] evoke more frequent counterfactual thinking than positive outcomes. ...more than 90 per cent were upward' (Roese 1997)

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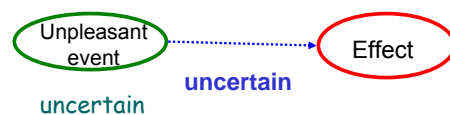
## Distant worlds may be seen as 'unlikely' worlds



## Interpretation of the examples of conflict in probabilistic terms

Even a small probability of the unpleasant event is sufficient to activate fear. This probability depends on:

- the probability that the event will occur,
- the probability that the event will produce a negative effect



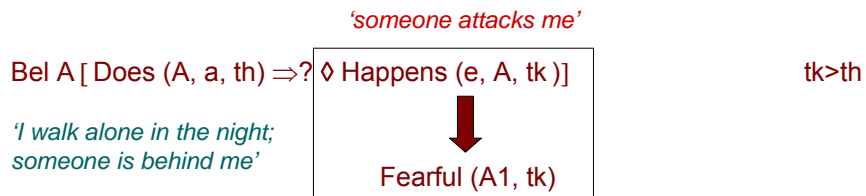
Therefore,  
if  $\text{Prob}(\text{event}) = \text{low}$   
or  $\text{Prob}(\text{effect}|\text{event}) = \text{low}$ ,  
a cognitive conflict occurs.

*'I walk alone in the dark;  
someone is behind me'*

*'someone attacks me'*

## Example: Belief-Emotion Conflict\*

*"I was coming home from a relative's place and it was about 9.30/10 P.M. I was confident that nothing would happen to me, yet there was this slight feeling of fear."*



**Even a low likelihood of the effect (being attacked) is sufficient to trigger a (slight) emotion of fear**

\*We denote with  $\Rightarrow?$  an 'uncertain implication'

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## Second Example: Belief-Emotion Conflict

Bel A [ Do (A, a, th)  $\Rightarrow?$   $\diamond$  Happen (e, A, tk) ]  
*"If I walk alone in the night, It might happen that I will be attacked."*

↓

Fearful (A, tk)  
*I feel fearful,*

***low likelihood of the event-effect relationship***  
*even though I don't believe that it is likely that I will be attacked*

In this example the *low likelihood of the event-effect relationship*, and consequently of the effect, are made explicit.

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### Third Example: Belief-Belief Conflict

*"I went up the stairs in a high, dark house full of shadows, passed a door and had the feeling that someone or something was behind me, although I knew I was alone."*

Bel A [Do (A, a, th)  $\Rightarrow$ ?  $\diamond$  Happen (e, A, tk)]



Fearful (A, tk)

Even a *low likelihood of the undesirable event* (I walk in a dark house, someone is behind me) is sufficient to produce a (low) likelihood of being attacked, and therefore a (slight) feeling of fear.

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### Avoidance attitude

An *avoidance attitude* may originate from *forward hypothetical reasoning*

(*"if I will not do a, event e will not occur"*)

or from

*backward hypothetical reasoning*

(*"if I had not done a, event e would not have occurred"*)

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## Forward hypothetical reasoning

Bel A [ $\neg$  Do (A, a, t > th)  $\Rightarrow$ ? ( $\neg$   $\diamond$  Happen (e, A, t)]

If I will adopt, in the future, a behavior which exposes me to a undesirable event, some undesirable effect will occur to me.



Goal A ( $\neg$  Do (A, a, t)

Therefore, I should avoid that behavior, in the future.  
(*avoidance attitude*)

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## Backward hypothetical reasoning

Bel A [ $\neg$  Did (A, a, th)  $\Rightarrow$ ? ( $\neg$  Happened (e, A, tk)]

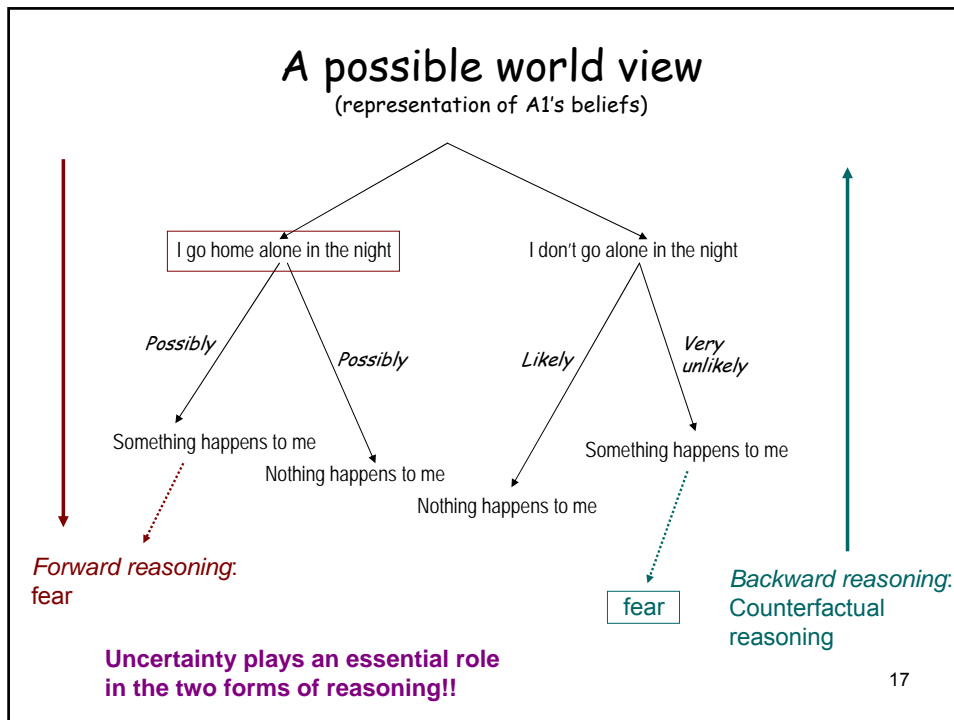
If I had not adopted, in the past, a behavior which exposed me to a undesirable event, some undesirable effect would not have occurred to me.



Goal A ( $\neg$  Do (A, a, t)

Therefore, I should avoid that behavior, in the future  
(*avoidance attitude*)

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## What other kinds of emotion-belief conflict might there be data for?

- Other negative emotions (other than fear)?
  - Anger at someone?
    - 'I got angry with my son for leaving his toys out today although I knew he always left his toys out; I was really only angry because I had had a bad day at work'
- Any positive emotions?
  - Wishing for something in the future?
    - 'I know I won't win the dance competition but I wish I could'
  - Wishing to 'remake' the past?
    - 'I wish I had met her twenty years earlier'

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## Counterfactual thinking may originate, as well, from actions performed by other people

Some examples of **anger** from ISEAR

When in a difficult moment I couldn't express myself correctly and my thought came out with distortions bringing about highly negative and distorted results

*(action done by self; bad consequences on self)*

When I saw a few people beating a man who seemed to be a stranger

*(action done by somebody else;  
bad consequences on somebody else)*

When a teacher unjustly gave me zero in a test saying that I was cribbing

*(action done by somebody else; bad consequences on self)*

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## If-only regrets activated by anger

When in a difficult moment I couldn't express myself correctly and my thought came out with distortions bringing about highly negative and distorted results

*(action done by self; bad consequences on self)*

*"If only I was able to express myself more correctly...!"*

When I saw a few people beating a man who seemed to be a stranger

*(action done by somebody else;  
bad consequences on somebody else)*

*"If only people were less aggressive towards strangers ...!"*

A teacher unjustly gave me zero in a test saying that I was cribbing

*(action done by somebody else; bad consequences on self)*

*"If only that teacher was more correct in his exams...!"*

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## Possible validation of the 'strategic rationality' effect

- Are cognitive conflicts (belief-belief and belief-emotion) occurring also on 'positive' emotions?
- Is imagination a frequent triggering cause also for 'positive' emotions?

*... comparing fear with hope, anger with relief, with new data from Geneva...*

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## Other validation opportunities from ISEAR data analysis

- Prevailing categories of causes for every emotion
- Relationship between category of cause and emotion intensity
- Relationship between emotion intensity and duration
- Examples of 'real' emotions on which to test cognitive models (e.g., envy and 'germane' emotions)

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