

# Using the ultimatum game to teach economic theories of relationship maintenance to A-level students

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## Teaching A-level psychology: Extending beyond the specification – why bother?

**W**HEN TEACHING at A-level, we often present a model of psychology that doesn't extend beyond the confines of the specification. However, sometimes not only is it possible to provide insight into other areas of psychology, it provides a novel way of understanding a concept included in the specification itself. This lesson allowed me to do this while utilising knowledge gained from my undergraduate dissertation – also giving students insight into one of my areas of interest, and the research process.

By extending student's knowledge into other areas of psychology we offer them an opportunity to explore research extending their knowledge into degree level psychology, and outside of the fairly strict paradigm approaches taught at A-level (cognitive, behavioural, etc.). I've also enjoyed talking to students about research from a personal perspective. This lets them know that you've conducted research, have creatively designed projects, and are aware of the frustrations and limitations of psychology research.

### A specific example

The AQA PSYA3 module offers options, including the study of relationships psychology. As a part of this topic, students are expected to understand models of the formation, maintenance and dissolution of relationships – most will study at least one economic theory of relationships based on a balancing of benefits and costs in dyadic relationships. Such economic theories are

used in various areas of psychology, and explanations of them may be assisted by conceptually simple games arising from economics and game theory.

Economic games such as the prisoner's dilemma, tragedy of the commons games and ultimatum game variations offer conceptually simple examples of experimental psychology in action. These can be used to teach concepts to students in other areas, in particular areas of psychology which involve 'economic theories'. For example, the ultimatum game can be used to teach students two economic theories of relationship formation and maintenance, as discussed below. Because the ultimatum game is a simple one-shot two player game I believe it holds potential to be used to help explain a range of economic theories. While for group or organisational level economic theories other games or adaptations might be appropriate, the simplicity of the ultimatum game in dealing with one-on-one exchanges provides a useful insight for students into those theories, and also into the broader academic setting and research programme.

### The game

The ultimatum game (Guth, Schmittberger & Schwarze, 1982) is a two-player game, in which an experimenter instructs one participant – the proposer – to make an offer to split a sum of money, typically £10 with another participant. Another participant – the responder – may either accept or reject this offer; if they accept, the money is split as proposed, if they reject then neither player receives any money.

***In the lesson...***

Because of the simplicity of the game, a slide with brief instructions and a few options can be on a whiteboard as students arrive in a lesson simply instructing them to select from four options, for example:

**Game... (using your voting cards)**

- You have £10 to split with someone (me).
- You have to make an offer to me for how to split that money (e.g. 50/50).
- If I accept the offer, it's split as you suggest. If I reject the offer neither of us receives *any* of the money.  
What do you offer?  
(A) £5 (B) £4 (C) £3 (D) £2

**Classic economics**

Standard game theory suggests that any non-trivial offer should be accepted by the responder. After all, any offer is free money. Similarly, we expect to see proposers making very low offers to their partners – they, after all, have no obligation to make a high offer.

***In the lesson...***

After students have voted they can be given a brief explanation that, what they've just participated in is a psychologically interesting economic game. On screen students can be told that they should have selected the lowest amount they could, and that generally – despite the fact they should accept any offer – responders tend to reject offers under 25 per cent.

At this stage a brief introduction can be given in to why psychologists are interested in economic games, what they might tell us, what kinds of manipulations are made, and indeed, why our manipulation (in an open classroom setting) might be a poor model. Importantly, it is pointed out that some economic decisions might involve non-monetary exchanges, for example, 'a listening ear'. After a brief discussion about how this might apply to relationship formation, the teacher can point out the breadth of possible

research in the area, including the use of brain scans, response times, personality, environment, culture, genes, etc.

**Relationships and classic economics**

Social exchange theory suggests that, in relationships – including friendships – partners are seeking to maximise their rewards, and to minimise their costs. The classic ultimatum game expectation provides a direct analogue for this theory.

**Ultimatum game again**

- Economic theory says we should always make small offers (to keep as much for ourselves as possible),
- and if we're the respondent, accept any offer (because any money is free money) and try to get as much money as possible...
- can we apply this to relationships?

***In the lesson...***

Teachers can then lead the discussion to how this type of research, in particular the idea of non-monetary investments, might link to relationships. The social exchange theory is one theory appropriate to this type of discussion, with its focus on partners in a relationship aiming to maximise rewards whilst minimising investments – as per the theoretical economic ultimatum game response.

The lead in to the social exchange theory might involve a discussion regarding the types of investments involved in relationships, and what things psychologists might thus be interested in. Because students should have some understanding of the breadth of research some able students may offer research paradigms for experiments in relationships at this stage. These might include suggestions regarding the types of investments and rewards involved, and how partners see the balance of costs/rewards in relationships and the importance this might hold.

### **The ultimatum game – consistently non-economic decisions?**

From Guth et al. (1982) onwards, many offers giving responders below 30 per cent of the money are rejected, and we find that generally proposers offer in the region of 50 per cent (Abbink et al., 2001; Pillutla & Murnighan, 1996; Sanfey et al., 2006; Sanfey et al., 2003; van't Wout et al., 2006). We can rule out that this is due to the relatively small amounts of money involved as this result has been replicated in a study with a £100 pot to split (Hoffman, McCabe & Smith, 1996)

### **Relationships and the ultimatum game result**

What seems to happen in the ultimatum game is fairness kicks in; people want results which are fair, which is why they reject amounts when they're of a low proportion of the total, even when in absolute terms they might have accepted the amount had the total pot been smaller (i.e. their cut had been bigger).

In fact, we see that not only is gaining money or other similar tokens rewarding, but fairness itself is rewarding – something the students can consider in later tasks with further reading (e.g. (Wolpert, 2008) who discuss the neurological rewards of 'fairness'). Students made the step to an economic model including 'fairness' easily because the theory had been built up using the ultimatum game the first time, and the students knew the shortfalls of Social Exchange Theory. Perhaps more importantly, the ultimatum game dichotomy of 'classical expectation' versus 'result' and the concordant social exchange (reward is all) versus equity (fairness is rewarding) provided a useful heuristic memory device to remember the theories by.

#### **more more more ultimatum game**

- Classically the ultimatum game suggests people should go for more more more (as 'social exchange theory' suggests in relationships).
- However, in fact they seem to be quite fair, going for 50/50 splits, with responders rejecting unfair offers.
- What might this mean for relationships? (Think about economics.)

#### ***In the lesson...***

After preliminary work on social exchange theory the ultimatum game comes up again, linking the classic expectation, in which reward is everything, with the social exchange theory. This is contrasted with the actual results which tend towards 'fairness' principles. This result is linked to the equity theory in which partners desire equitable investments to be made by both members, but not necessarily of the same kind. Students can be encouraged to think about how the experimental result can be translated into an economic theory in relationship psychology. Follow-up tasks can include exercises involving 'balancing the books' or demonstrating the 'best' type of relationship by using tokens to indicate investments under each theory.

#### **Conclusion**

By using the game theoretic expectation for the ultimatum game alongside the experimental result, we can provide an analogy for teaching concepts including the social exchange and equity theories of relationship formation and maintenance. This analogy also provides an easy way to introduce students to experimental research and the ways in which researchers make minor manipulations in order to explore the effects of these.

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My slides for this lesson – including video links and worksheets to assist – can be downloaded here:

[www.psychexchange.co.uk/resource/2153/](http://www.psychexchange.co.uk/resource/2153/)

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