

# Sheconomics: Women's spending behavior is menstrual-cycle sensitive

or how women's emotions cost them money

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## Overview of talk



- **Background** – how ovarian hormones account for variations in female cognitive and affective responses
- **Report on a survey** of women's spending behaviour and menstrual phase
- **Findings and conclusions**

# The irrationality of economic behaviour

- ‘Expected utility theory’ - the economists’ belief that humans are motivated to make and keep money and will make logical decisions
- Challenged by cognitive psychologists (e.g. Tversky & Kahneman 1981) who found:
  - expected utility theory breaks down under different circumstances
  - people use heuristics, hunches and emotions rather than logic (the Ultimatum Game)
  - people will throw good money after bad (prospect theory, sunk cost error)
  - people are more sensitive to monetary losses than gains
    - and many more irrational biases (Thaler)

# Women and money pathologies 1

- Money is a more emotionally loaded topic for women than for men (Gresham and Fontenot, 1989).

## **Females are also:**

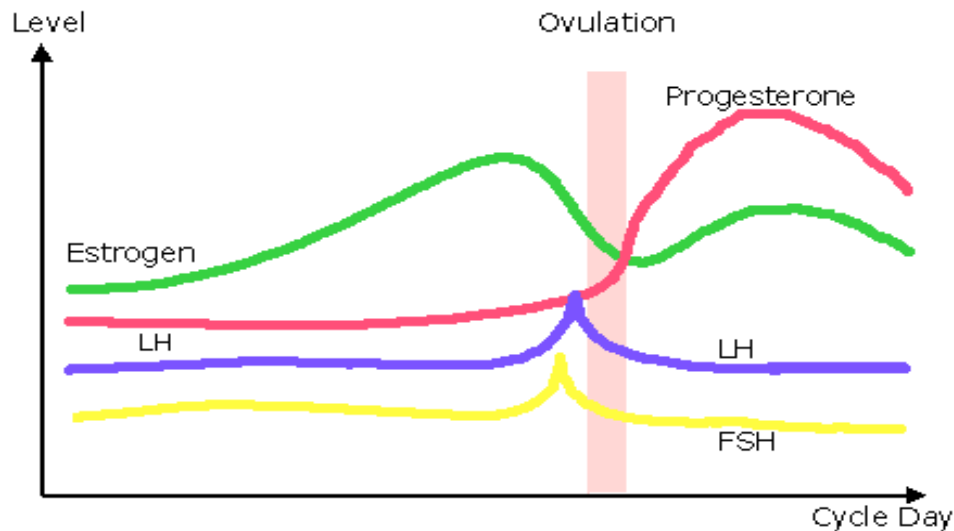
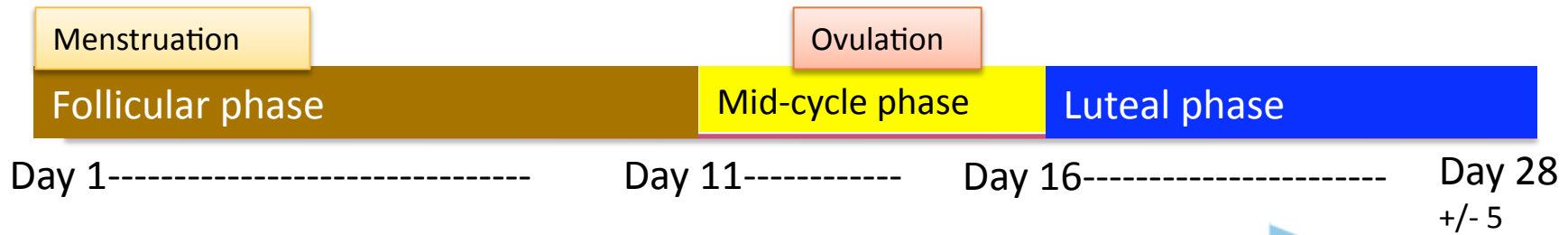
- more extravagant than men but also more anxious about money (Rubinstein (1981)
- more prone to depression and compulsive spending
- more likely to feel a sense of envy for money and deprivation when faced with a lack of it (Prince, 1993).

# Women and money pathologies 2

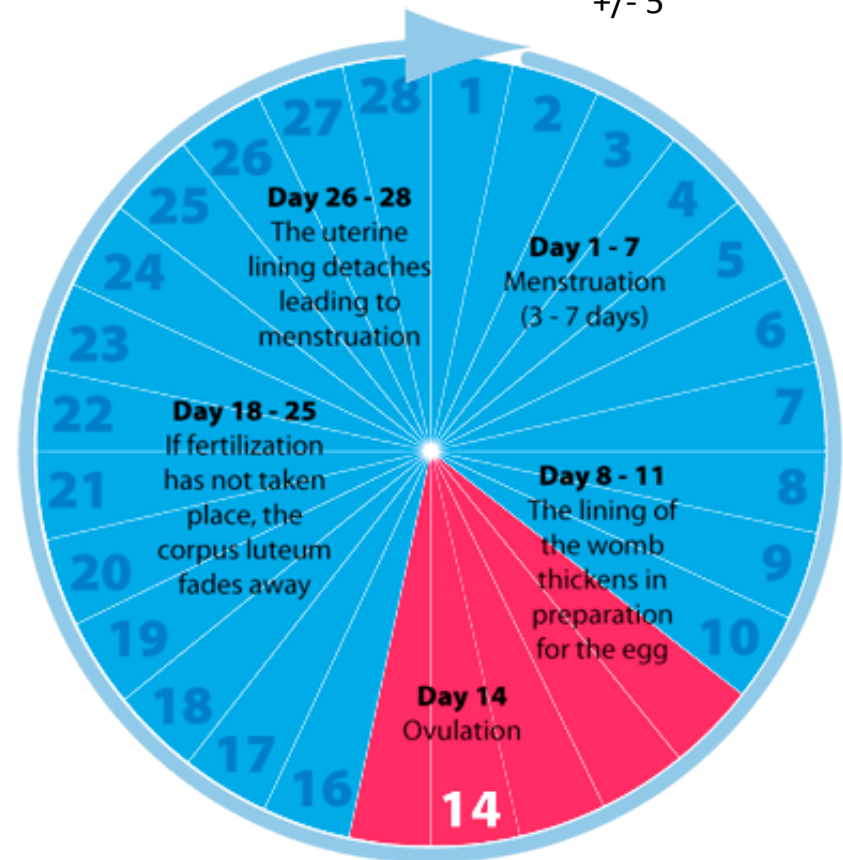
In addition:

- Women's self of sense is more closely tied to shopping than men's and women attach more significance to the shopping experience than men (Dittmar & Drury, 2000).
- Many women regard it as more complimentary to their role (Kelly, 1991) and are more inclined to engage in behaviours such as window shopping, social shopping and dressing up to go shopping (Johnstone & Conroy, 2005).

# Female menstrual cycle



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# The influence of ovarian hormones on behaviour 1

## The ornamentation effect

- At ovulation women adapt their dress style to impress men. At this time women are twice as likely to engage in extra-marital behaviour

(Jones et al. 2005)

## Cognitive and affective responses

- Women show more impulsive behaviour, anxiety and irritability during the pre-menstrual (or luteal) phase

(Baca-Garcia, 2000; Hazelton et al. 2007)

You Tube: 'Premenstrual syndrome'



# The influence of ovarian hormones on behaviour 2

## Menstrual phases also affect:

- Women's emotion recognition accuracy (Derntl et al. 2008)
- Preferences for masculinity in male bodies (Little, Jones & Burriss, 2007) and male voices (Feinberg et al. 2006)
- Fear recognition (Pearson & Lewis, 2005)
- Mood and food cravings (Cohen, Sherwin & Fleming, 1987)
- Women's physiological responses to alcohol (Lammers et al. 2006)
- Female body odour (Havlicek et al. 2006)

## Females are also:

- Twice as likely to succeed at smoking cessation in the luteal phase of their cycle (Allen et al. 2008) but
- More likely to injure themselves during exercise (Sandler et al. 2007).

## Is economic behaviour affected by ovarian hormones too?

# Menstrual brain changes

- Brain scans reveal that mental processes change across the cycle in response to cycling estrus hormones
- For example, fMRI studies show fluctuations in activity in the orbitofrontal cortex (OFC) region of the brain during the menstrual cycle (Protopopescu et al. 2005).
- The OFC is involved in motivational operations, alteration of stimulus-reward associations, inhibitory control and emotional regulation

AND

- the OFC is activated by monetary rewards (Breiter et al. 2001)

These differences found in women with no outward menstrual mood changes, more effort is required to cope with surging hormones which cause PMS in one-third to one-half of all women. (Stern et al. 2005)

# Design of the study

- 703 women completed an online survey (aged 18 to 50)
- Answered questions about their spending habits and their spending behaviour in the previous seven days
- An optional section asked the women for information about menstrual cycle, regularity, date of last period and use of hormonal contraception
- 443 women completed the optional menstrual cycle section

further inclusion criteria:

not using hormonal contraception

not pregnant or been through menopause

normal menstrual cycle (28 days +/- 5)

# Participants

Data from 322 normal cycling women analysed

Categories of menstrual phase and number of women in each phase.

Phase	Days	n
Follicular (menstrual and post-menstrual)	1-11	110
Mid-cycle (ovulatory)	12-16	59
Luteal (pre-menstrual)	17-28+	153

# The survey instrument

## Recent Spending and Saving Scale (RSSS)

15 statements, 3 sub-scales:

- **Impulsive Spending Behaviour** (ten items, e.g. *my spending has been out of control; I have spent more than I could afford*)
- **Negative Affect relating to money** (two items, *I have felt shame or guilt after a shopping trip; I have worried about money*)
- **Positive Money Behaviour** (three items, *I have set myself a budget and stuck to it; I have put some money into savings; My spending has been careful and controlled*).

A five-point Likert response scale

*Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree.*

- Items in subscale 3 were reverse scored before summing.

Reliability tested with coefficient alpha and high,  $\alpha = .89$  for 15 items (n = 443).

No items removed.

# Results 1

Mean scores on RSSS for women in each menstrual phase

Phase	Follicular n = 110	Mid-cycle n = 59	Luteal n = 153
Mean RSSS score	39.8	42.8	43.4
sd	11.5	12.7	11.4

Overall scores increased as women went through the cycle and were highest during the luteal phase (differed from follicular phase  $p=.014$ )

## Results 2

Mean scores on each sub-scale of the RSCS for women in each menstrual phase

Phase	Follicular n = 110	Mid-cycle n = 59	Luteal n = 153	
Impulsive Spending Behaviour	24.5 SD = 8.1	26.7 SD = 9.3	27.3 SD = 8.4	**
Negative Affect	6.3 SD = 2.0	6.7 SD = 2.3	6.6 SD = 2.0	ns
Positive Money Behaviour	8.9 SD = 2.9	8.5 SD = 2.6	8.4 SD = 2.7	ns

Impulsive spending scores increased as women went through the cycle and were highest during the luteal phase (differed from follicular phase  $p=.009$ )

## Results 3 Correlations between day of cycle 1-28 and strength of agreement

Statement	<i>r</i> value	<i>p</i>
In the last 7 days I have spent £25 or more than I needed to.	.20	.000
My spending has been out of control	.16	.005
In the last 7 days I have spent £250 or more than I needed to.	.14	.012
I have bought something I wouldn't normally buy because it was on special offer	.13	.016
I have regretted buying something	.13	.020
I have spent more than I could afford	.12	.033
I have gone shopping for something and come home with something different	.11	.040
In the last 7 days I have spent £100 or more than I needed to.	.11	.053
I have bought something on impulse	.10	.070
I have bought something that I am unlikely to wear/use	.08	.150
I have felt shame or guilt after a shopping trip.	.09	.100
I have worried about money.	.004	.950
†I have set myself a budget and stuck to it.	.14	.012
†My spending has been careful and controlled.	.12	.032
†I have put some money in savings.	-.03	.620

•† items reverse scored

# Conclusions

- Fluctuations in ovarian hormones account for a variations in a wide range of cognitive and affective responses in women - and their behaviour with money is no exception.
- This study is the first to show that women's spending behaviour varies during the menstrual cycle.
- Women in the luteal (pre-menstrual) phase are more likely to report over-spending, making unplanned purchases and feeling out of control with money.
- Although socio-cultural influences play a role in human economic behaviour sex-specific biological mechanisms also explain the oft-cited differences between men and women in this domain.

# Thank you

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