

Work-family life courses and inflammation in mid-life

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Work, Family and Health
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OP18.4

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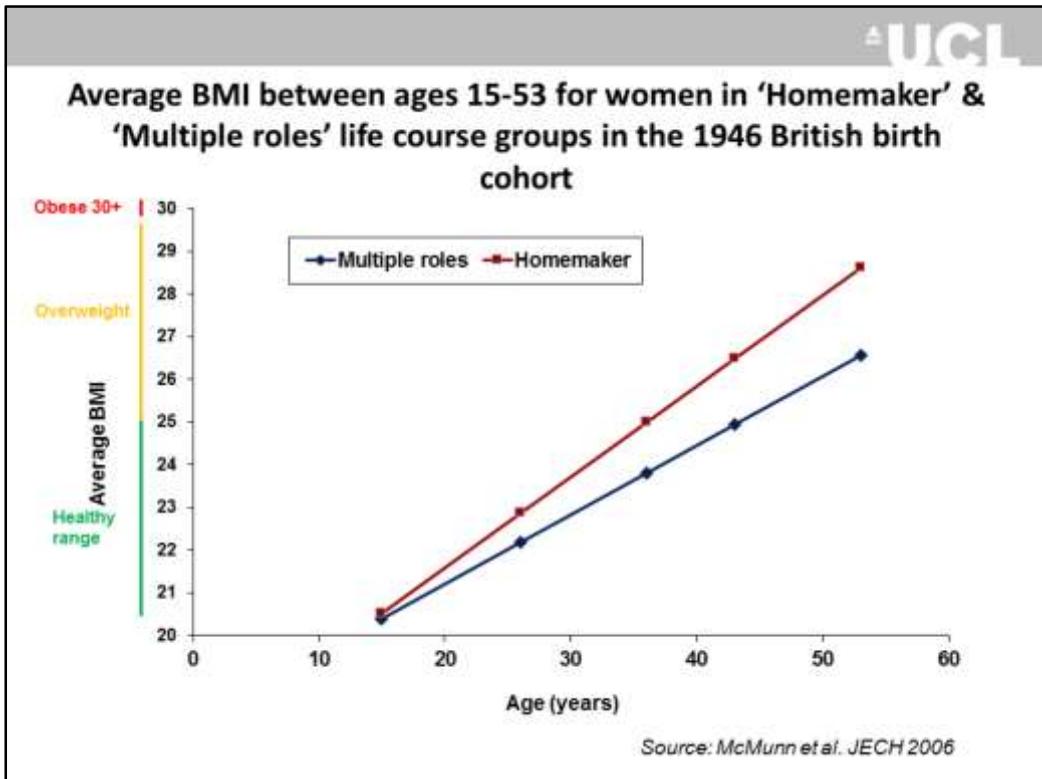
This presentation is part of a bigger project that is funded by the European Research Council. What we are trying to do in this project is to look at the health effects of combining work and family across the adult life course in three of the adult British birth cohort studies. The work I am going to be presenting today is just some of the research that we have done on one of those cohort studies.

Inflammation

- When is it a good thing?
 - Response to injury and infection
- When is it a bad thing?
 - Chronic, low-grade inflammation
 - Associated with increased later risk of heart disease and some cancers
 - Psychosocial stress often implicated as a 'cause'



I am going to start by talking about inflammation and when this might be a good or a bad thing. Inflammation is generally a good thing - it's the body's normal way of responding and getting over some kind of infection or injury. But it can also be a bad thing and that tends to happen when you have chronic (long-term, low level) inflammation. This has been associated with increased later risk of heart disease and some cancers such as colon, breast and lung cancers. Psycho-social stressors, so things like aspects of the work and family environment, have often been implicated as potential reasons why you might see this sort of low level, long term inflammation which is generally thought to be quite bad for later health.



This project is based on previous work that Anne McMunn did looking at the women from the 1946 British Birth Cohort - the oldest adult birth cohort that we have in the UK. This research was looking at just the women and looking at women who had multiple social roles, this is the blue line. These were women who were working, who were mothers and who were married, and it compares their average BMI across the adult life course to the women who had taken quite a bit of time out of paid work to look after home and family. And what you can see here is that the women who had taken time out to look after home and family, their average BMI across the adult life course tended to be higher than the women who had been working. It seems to be that the combination of work and family might be important for health. In this project we're not just going to be looking at women but we're also going to be looking at men and at some of the younger birth cohorts. Today I am going to be presenting the results for the 1958 birth cohort.

Does the way in which men and women combine their work and family roles have the potential to affect their biology (inflammatory markers) by mid-life?

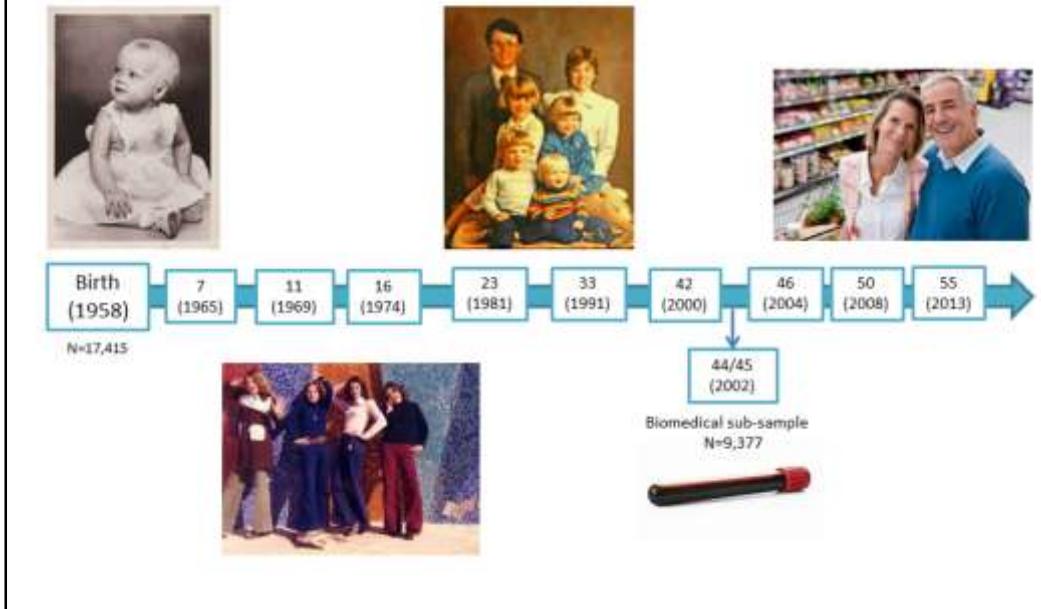
Yes

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So does the way in which men and women combine their work and family roles have the potential to affect their actual biology? In this particular study we are looking at inflammatory markers in mid life and the sneak preview of the findings is 'yes'.

National Child Development Study (1958 British birth cohort)



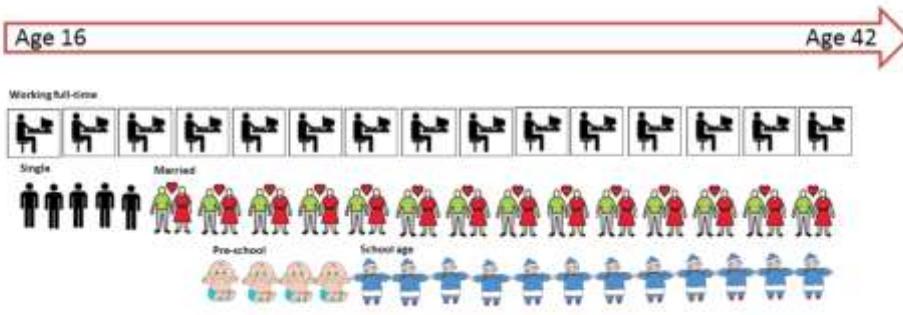
So as I mentioned we are using the 1958 British Birth Cohort Study or the National Child Development Study and this aimed to recruit all of the babies born in a single week of 1958. Just under 17,500 babies were recruited at that point. It's a multi-purpose study so they have collected lots of different kinds of information right across people's life courses, they are still following those same people up now. They are planning the age 60 data collection at the moment which will be in 2018. We've got information on health right across the life course as well as social, economic and developmental factors. It really is a fantastic data resource for all sorts of different types of research questions.

One of the things that makes it particularly good for this study is that in mid life at age 44-45 in 2002 some of the participants were invited to a biomedical survey - just under 9,500 of them were asked and as part of that survey they collected blood samples from the participants. So we were able to research with objective markers of health status, like inflammatory markers, which I am looking at here.

In terms of people's work and family histories, this is very similar to the approach that Juliet Stone (OP18.3) has just shown. One of the great things that we can do with this data set is that we can map out people's work and family life courses. In particular we were interested in what people were doing between the ages of 16 - which was the compulsory minimum school leaving age - up to age 42. Stopping a couple of years prior to when we had the blood samples available.

We were interested in what they were doing in terms of work, in terms of partnership and in terms of parenthood. We wanted to consider all those three things together, recognising that they are very much interconnected across people's lives.

Work-family histories



'Work, early family' - most common work-family life course for men (34.4%)

'Part-time work, early family' – most common work-family life course for women (18.0%)

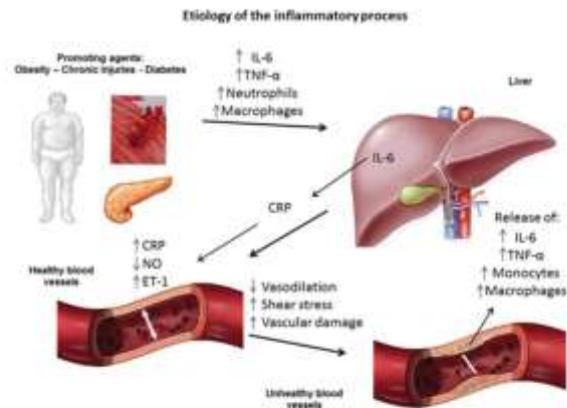
12 different work-family groups used

This is an example of the typical work and family life course of a man of this cohort. The most common work and family history for men of this cohort was to be working full-time all the way through from age 16 to 42 and men tended to partner (and that tended to be marriage) from their early twenties onwards and then having children from their early twenties as well.

For women of this cohort there was much more variation. So women were much more likely to be taking breaks from work to look after children. They were more likely to be working part-time and actually part-time work, early family group was the most common work and family life course that we saw for women in this cohort. What we have done is grouped people based on those who had similar work and family life courses and then we compared those groups in relation to health in mid life. And we actually looked at 12 different work family groups but for the purposes of keeping it simple I am not going to be showing all of this today. I am pulling out some of the groups of interest in our results.

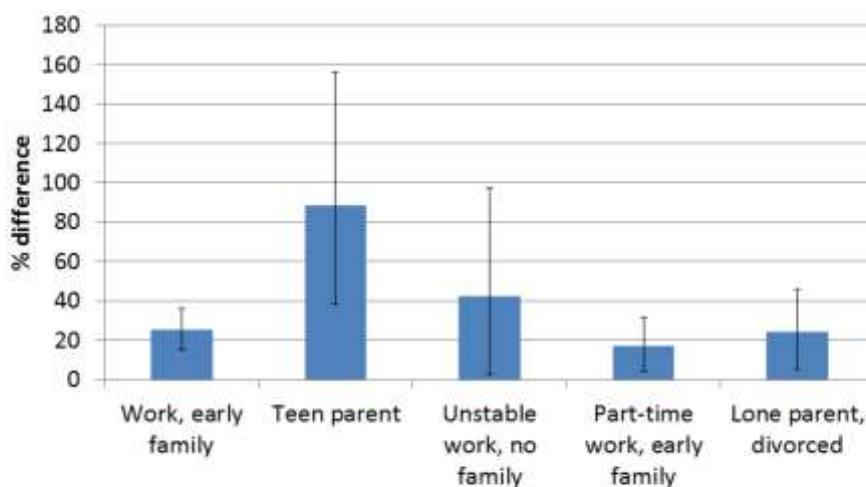
Inflammatory markers

- C-reactive protein
- Fibrinogen
- Von Willebrand Factor



In terms of our inflammatory markers we had three available to us from the blood sample at age 44/45. The first of these is something called C-reactive protein which is a very good marker of inflammations. It's produced by the liver quite quickly after some kind of stress. The second was fibrinogen which is also involved in clotting but also has an inflammatory function in the body. And then finally we looked at Von Willebrand Factor which is less well known, again it has functions in the body to do with clotting of the blood but it also has an inflammatory function. So we have taken these three things together as they've all got inflammatory functions but we are trying to get at slightly different aspects of the same thing.

C-reactive protein



Compared to 'Work, later family' – strong ties to F/T paid work and later marriage & parenthood

I am going to present the results first for C-reactive protein. The associations between different work and family life courses and our inflammatory markers didn't differ for men and women. So I have done our analysis grouping the men and women together. All the way through the results I am comparing each of these different groups to people to the work, later family group - these are people who had strong ties to full-time paid work between the age of 16 and 42, they tended to marry a bit later, in their thirties, and they had their children from their early thirties. The group on the left - the work early family group - that's the group I previously showed you. They differ from the work later family just in terms of the timing at which they were married and the time in which they had their children but they were working full-time all the way through. What we see is that their levels of C-reactive protein by the time they are middle aged are higher than the people who made later transitions to marriage and parenthood.

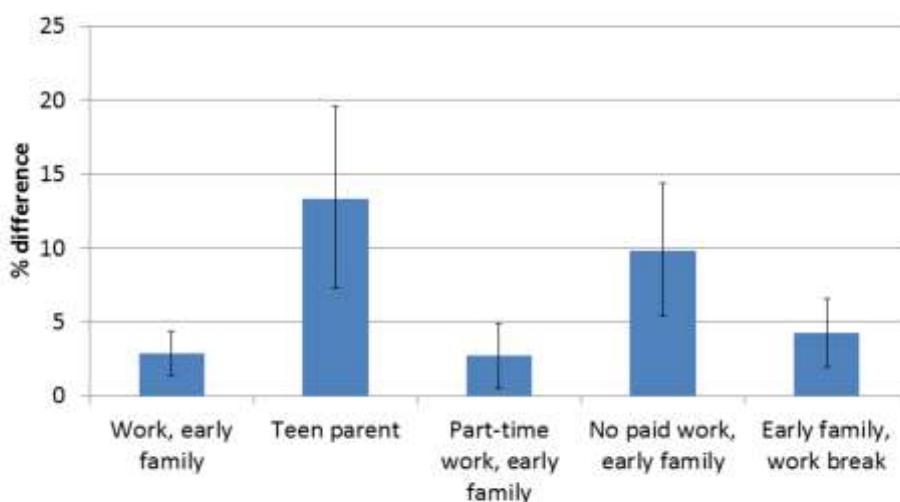
The teen parent group - these were people who had their first child prior to the age of 20 - their levels of C-reactive protein were higher, the difference between that and our reference group was about 88%, so substantially higher.

Then we had some groups which differed based on their ties to paid work, so an unstable work group - these were people who were not partnered, who didn't have children and were working intermittently across their life course. Their levels of C-reactive protein by the time they were middle aged were raised.

We had a group of women who were working part-time throughout and again had their families slightly earlier, their levels of C-reactive protein were higher as were those who had experienced a divorce or separation and who were subsequently a

lone parent.

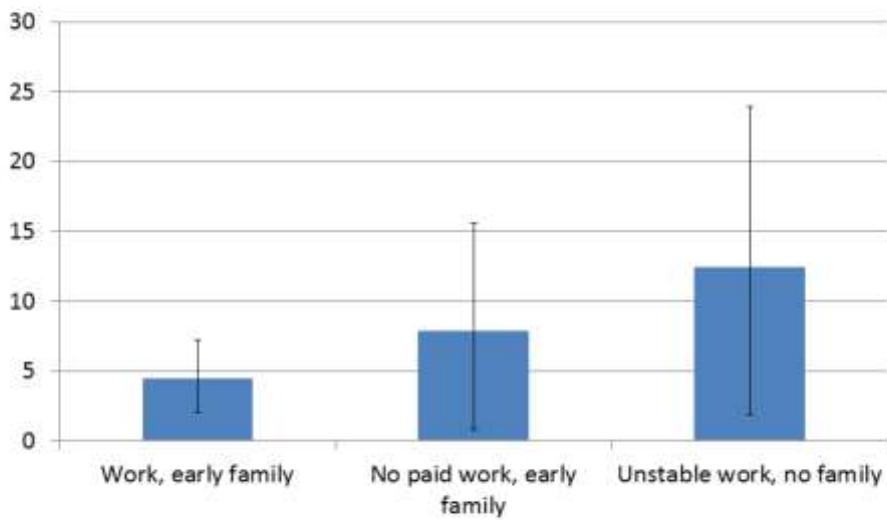
Fibrinogen



Compared to 'Work, later family' – strong ties to F/T paid work and later marriage & parenthood

The results for fibrinogen were very similar to what we saw for C-reactive protein. Again it was the groups which made earlier transitions to parenthood, so the teen parent group is probably the one that stands out the most on that chart. But again it was the work early family group, so they differed from our reference just in terms of the timing of when they made the transition to family life, they still had strong ties to paid work throughout their life course. And again it was the part-time work group. We also saw for fibrinogen this no-paid work group - this was a group of women who were looking after the home and family for a large proportion of their life course. Their levels of fibrinogen by the time they were 45 were raised. And then lastly the group early family work break - these were people who had their family early and they took a break of employment around that time.

Von Willebrand Factor



Compared to 'Work, later family' – strong ties to F/T paid work and later marriage & parenthood

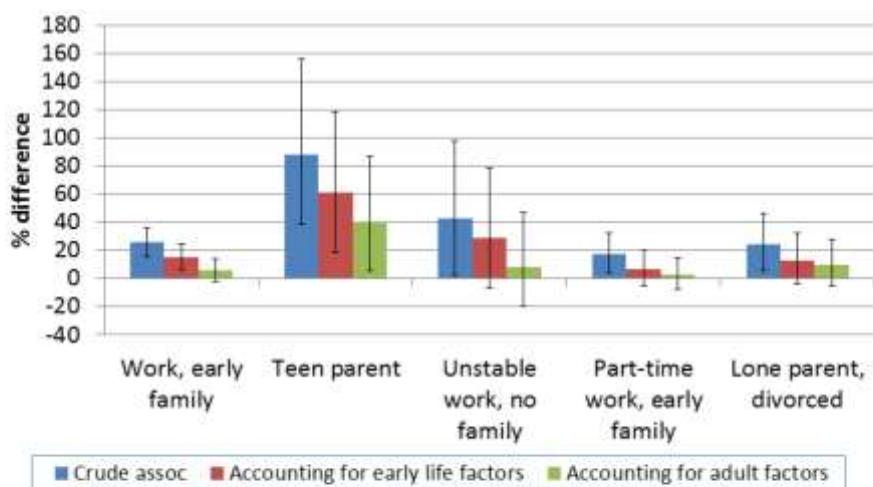
This is the Von Willebrand Factor, we generally saw less with this inflammatory marker. But again it's the very consistent story, it's the groups that made an earlier transition to parenthood and groups with weaker ties to paid work which had raised levels of inflammation by the time they were middle aged.

What might explain these results?

- Differences in early life circumstances?
- Differences in health behaviours (smoking, alcohol and physical activity) or BMI?
- Differences in socioeconomic circumstances?

So why is it that people have their children a bit earlier and have weaker ties to paid work across their adult life courses tend to have increased inflammation by the time that they are middle aged? Firstly is it because they are somehow different to begin with in terms of their early life circumstances? Are people who make an earlier transition to parenthood somehow more disadvantaged, are there differences in terms of health? Also are people who have poorer health in childhood less likely to have subsequent strong ties to paid work throughout their adult life course? Secondly we looked at whether it was to do with health behaviours between our different work and family types. So are there differences in terms of smoking status, the level of alcohol consumption, physical activity or BMI? And lastly were there were differences in socio-economic circumstances? So differences in things like social class between those different groups?

C-reactive protein



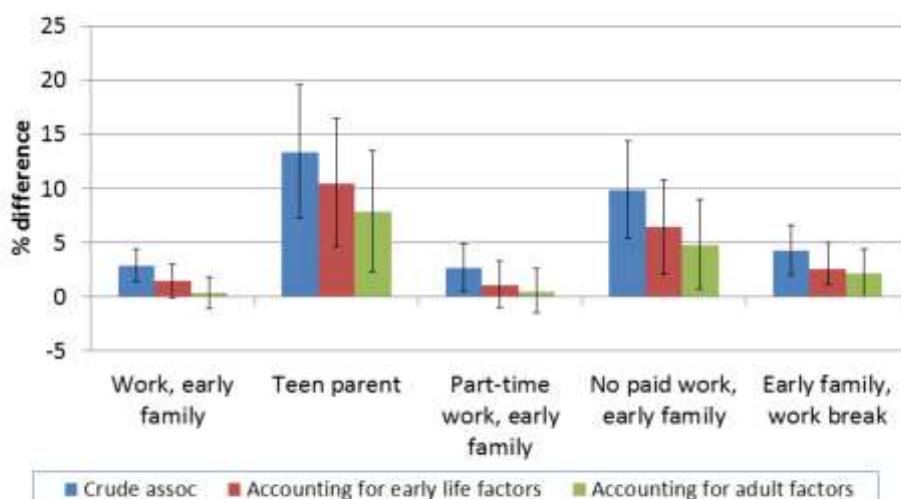
Compared to 'Work, later family' – strong ties to F/T paid work and later marriage & parenthood

The blue bars are the results I showed you before. The red bars show the results after accounting for early life factors.

You can see that once you account for early life factors it does explain some of the differences that we have seen, so for the unstable work, no family group and for our lone parent divorced group that's no longer statistically significant so there is not a difference for those people compared to our reference of the work later family.

When we account additionally for various adult factors, health behaviours, BMI and adult social class, that seems to be telling us a bit more. For the work, early family group it seems to be largely due to people in that group tending to have slightly higher BMIs than our reference group. But what you will notice is for the teen parent group there is still an association between being a teen parent and raised inflammation, in this case C-reactive protein, by mid life that we don't fully account for here.

Fibrinogen



Compared to 'Work, later family' – strong ties to F/T paid work and later marriage & parenthood

Lastly in terms of fibrinogen - again the blue bars are what I have shown you before. Once we account for early life factors the differences for the part-time group in the middle and the work early family group tend to wash out, suggesting that it's something to do with early life circumstances. Once we additionally account for BMI, health behaviours and adult social class differences that explains a bit more in terms of the early family work break group but again for the teen parent group we're still seeing that they have raised levels of fibrinogen by mid life that we don't fully account for here. Also the women in the no paid work early family group - these are the long-term homemaking women - their levels of fibrinogen is still higher by the time they are middle aged.

Summary of results

- Increased inflammation in mid-life for:
 - **Early family** combined with **stable work**
 - **Teen parents**
 - **Homemakers**
- Groups characterised by early transitions to parenthood = greater inflammatory risk

To summarise, what we are seeing across different inflammatory markers is that there is increased inflammation in mid life for the groups of people who have their family a bit earlier - so the early family group combined with stable work and the teen parent group - they still had higher levels of inflammation in mid life, as did women who were home makers.

Policy implications

- Increased support and opportunities for young parents
- Policies which help employees combine work and family roles
 - Affordable, quality childcare
 - Flexible working practices
 - Career progression opportunities, despite family commitments

One of the things that this work points to is increasing support and opportunities for young parents because we are seeing that for the teen parent group in this cohort that their levels of inflammation and health are substantially worse e.g. affordable, quality childcare so that people can make the choice and people have options to work etc. And also flexible working practices are probably likely to be important as well.

Thank you

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and Anne McMunn



Notes:

ICLS hosted a policy seminar on Work, Family and Health at UCL in December 2015. The seminar was chaired by Richard Bartholomew, (former), Chief Research Officer, Children, Young People and Families Directorate, Department for Education and the presentations coordinated by Dr Anne McMunn, ICLS Co-investigator and UCL Graduate Tutor. Transcripts from this event, including this paper, have been made available via the ICLS Occasional Paper Series. This series allows for those who were not able to attend to read an account of the presentation. Other papers in the series include:

OP18.1 Work to Family conflict and Family to Work conflict- who is more at risk?

Tarani Chandola, University of Manchester and ICLS

OP18.2 Gender attitude concordance and relationship satisfaction. Lauren Bird, UCL

OP18.3 Balancing work and family over the life course and women's health in later life. Juliet Stone CPC, University of Southampton

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