Background

1. Procastination literature:  
   Procrastination is widespread affecting some 80% of students and 20% of adults (Steel, 2007). Many suffer effects on their health (Sirois, 2007) and finances  
   (O’Donoghue & Rabin, 1998), and most procrastinators wish to reduce it (O’Brien, 2002). There is no single agreed definition of procrastination, but the myriad procrastination questionnaires include at least some of the following factors: delay of actions and work, unnecessary or unreasonable delays, delaying in spite of intending differently, irrationality in the sense of failing to maximise utility, suffering consequences like missing deadlines or stress due to rushing. Similarly, a search for mechanisms of procrastination reveals a variety of personality trait correlates like lack of conscientiousness facets such as self-control, achievement motivation, discipline etc and neuroticism facets such as impulsiveness, fear of failure low self-esteem etc. In a similar vein, people procrastinate in tasks with a diverse structures and characteristics: when rewards for work are delivered immediately or after a  
   delay tasks with and without deadlines, in the presence or absence of uncertainty about aspects of the task like reward or effort timing or magnitude, and typically tasks that are considered aversive, stressful or boring.
2. Taxonomy:
3. Evidence:

Research questions and hypotheses

1. What data am I interested in?   
   The Canvas learning management system data collected under strand 2 of the UCL-MUST project is especially relevant to the goals of this project. Information about when student access course-related material, when they work on and submit their assignments coupled with information about course context like the deadlines and time available for each assignment can together inform how students distribute their efforts in time towards a deadline. Hence, data from chemistry and biology courses CHM …, CHM …, BIO … where clicks have been annotated and information about course deadlines is present is of specific interest to us in terms of modelling.
2. What do I want to do with it? Research questions?  
   As a first step, we propose to conduct a model-agnostic analysis of how students have allocated efforts towards a task, like an assignment or a quiz. If an assignment is done online on Canvas, then it might be possible to extract when a student has worked on the assignment. Otherwise, the click activity preceding a deadline (but after the previous deadline) can be taken as a proxy for the amount of effort applied at a given time point towards a task. Given such time courses of working per person per task, we can cluster them to characterize the different ways and styles of work allocation in the task. Further, since multiple trajectories are available per student, it will be possible to determine how stable or variable their behavior is in time across tasks in a course or across multiple courses.   
     
   Following such a descriptive analysis of the time courses, we will turn to understand the mechanistic basis of students’ temporal decisions through computational models.
3. Assumptions about data: