Thinking through cases: articulating variable and narrative logics on a longitudinal analysis of drug use and school drop out

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Abstract
Mixed methods longitudinal studies continue to be rare, yet have potential for transcending the limits of qualitative and quantitative paradigms. This article compares the life stories of 47 young people generated from a cohort study of 6000 children born in 1995. The cases were sampled through an association between two variables – drug use and leaving school early – generating a four field table. Comparing the cases within and across each table cells, we question the 'black box' logic that underpins the assumption that cannabis smoking is consequential for educational success. Moving into a qualitative paradigm we reconceptualise the cases as butterflies captured in a net and work deductively to understand the species captured. Culminating with an analysis of a single case over time, we argue that narrative approaches are the starting point for understanding subsequent social action, providing a basis for larger scale quantitative modeling.

Keywords: mixed methods, longitudinal studies, narratives, drug use, school drop-out

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> ".. [the boarding school] was awesome so I was so sad, I was devastated, when I was kicked out. I was just lying there on the sofa at home, and I used a whole box of Kleenex [laughs] […].What was so unfair was that three guys and me were kicked out. Two of them had been busted for smoking cannabis before, and they got a second chance. But the first time it happens to me, I get kicked out. This is so unfair."
>
> (Pauline 20 years old)

Introduction

Pauline is one case out of 47 individuals sampled from a large quantitative cohort study following approximately 6000 Danish children born in 1995. She is one of 125 young people who in a survey at age 15 reported drinking alcohol and smoking cannabis frequently and at age 18 reported having dropped out of several educational programmes. Thus, Pauline is a case in a statistical table confirming the findings of previous research, that there is a strong correlation between early drug use (particularly cannabis smoking) and lower academic achievement and later school drop out (see Chatterji, 2006; Jeynes, 2002; Symonds, Schoon, & Salmela-Aro, 2016 for lower academic achievement and Bray, Zarkin, Ringwalt, & Qi, 2000; S. Kaplan, Peck, B. Kaplan, 1995; Lynskey, Coffey, Degenhardt, Carlin, & Patton, 2003; Stiby et al., 2015 for school drop out). But Pauline is also a case with *a unique life story,* which, when followed over time, reveals that she no longer fits the initial categorisation. By looking closely at Pauline and the other cases isolated by our sampling strategy (more on this later), we are able to think critically about our methodologies of capture, which in turn help to think about any underlying relationship or correlation between drug use and leaving school early.

In quantitative studies the metaphor of the black box is often used to delineate a relationship that can be hinted at through the operation of different variables - but the nature of this relationship remains hidden inside. The metaphor of the black box also suggests that causality does exist, it just cannot be seen, operating as an abstract 'real' that is not necessarily aligned with the concrete 'real' that we may see playing out in a

particular case. Our approach in this article questions the privileging of an abstract causality produced by a logic of variables, suggesting that a narrative logic might provide a better starting point for enquiry. In place of the black box we propose the metaphor of the butterfly net – which draws attention to the way we deploy variables in order to identify particular cases. The metaphor of the butterfly net encourages us to ask how a particular case came to be 'caught' in this way. The classification of cases through variables is part of this story, but rather than reifying these variables we seek to think critically about practices of classification (and misclassification) and how these may change over time – both in the structure of a data set but also as a dimension of lived experience.

In this article, we ask what it is that Pauline is a *case of* (Ragin & Becker, 1992) both in relation to the statistical finding – (e.g. the cross tabulation of two variables generated from a large-scale longitudinal survey) and in relation to the themes and categories emerging from the life stories of the other 46 young people interviewed for a qualitative longitudinal study about transitions to adulthood. Engaging with the unfolding life stories of the 47 cases, we discover diverse and complex accounts which tell us something about the relationship between drug use and educational transitions - but also about the importance of social context and circumstantial events. This is the complex knot that shapes prospective action, which appears to be 'caused' by factors that are isolated in variables yet which are mediated by narratives and their effects. In the opening quote Pauline explains that smoking cannabis does not lead directly to her dropping out of school. Rather, this happened because she was caught smoking cannabis and then refused a second chance, resulting in being '*kicked out* of school'. As we will go on to show, Pauline does not see herself as incapable or unsuccessful in relation to academic achievement, and we believe that this distinction matters in terms of her subsequent educational choices and her use of drugs. We argue that her narrative is a crucial starting point for understanding what follows, and that by paying attention to this, light can be shed on the 'black box' logic that underpins the assumption that early drug use itself is consequential for leaving school early and vice versa. [1]

[1] Research is still inconclusive. Some studies argue that drug use leads to school drop out (Bachman et al., 2008; Ehrenreich, Nahapetyan, Orpinas, & Song, 2015; McCaffrey, Pacula, Han, & Ellickson, 2010; Patrick, Schulenberg, & O'Malley, 2016; see also Townsend, Flisher, & King,

Thinking critically through cases, this article also makes a methodological contribution, building bridges between quantitative and qualitative paradigms, as we illuminate the relationship between what Abbott (1992a, 1992b) has called a variable and a narrative logic - the former focusing on connections, the latter on sequences and actions. We follow Abbott's argument that most standard positivist analysis responds to the black box of hidden causality by attributing agency to variables rather than cases. When variables are assumed "to do their things" (1992b, p. 55) a pseudo-narrative is created, as the researchers construct their own story to explain correlations between selected variables. The cases and social actions that lie behind questions in a survey become irrelevant (Abbott, 1992a). Narrative logics orient us to sequence and specificity. Shifting into a qualitative paradigm we draw on Polkinghorne's (1995) distinction between the analysis of narratives (for example finding common themes in a body of interviews or written accounts) and a narrative analysis – a higher level set of practices that focus on emplotment, producing not just a description but a history 'that explores intentional and unintentional outcomes' (Polkinghorne, 1995, p.19; Thomson, 2009, p. 26).

This study is unusual as it links variables and narratives based on interviews with the *same* people (Fetters & Freshwater, 2015) followed over time. Few studies have paid attention to longitudinal approaches for mixing data, and those who have (Christ, 2007; Sligo, Nairn, & McGee, 2018) often rely on a form of convenient or purposeful sampling to identify the cases and participants (Plano Clark et al., 2015). Our ability to randomly sample from the cells of a cross-tabulation generates some challenging insights as we pass through the interface of qualitative and quantitative paradigms (Elliott, 2008; Brannen, 2005; Bryman, 2007) enabling us to overcome the tendency to analyse them as separate entities that are only discussed together in the conclusion (Fetters et al., 2015:116). In this respect we contribute to a wider project that seeks to articulate variable and narrative logics (Sharland et al., 2017; Thompson, 2004; Tinkler et al., under review), bringing life back into longitudinal (life course) studies (Nico, 2016).

The paper is structured in three linked stages. First we explain how we generated a qualitative sample from a quantitative cohort study. In doing so we demonstrate what

2007 for a systematic review). Others argue that school drop out leads to increased drug use (Hill & Mrug, 2015; Mensch & Kandel, 1988; Reingle et al., 2016).

is meant by a variable logic, as we describe the cases according to predefined categories (such as drug experience, school achievement etc.) We then go on to employ a variable logic to our qualitative data, considering the coherence of groups and comparing the different cells of the sample frame. Second, we explore the cases captured in the cells using a narrative logic, asking how and why these cases came to be captured in this way. In this second stage it is obvious that the qualitative data exceeds the variable logic of the sampling and by turning to an analysis of narratives we gain insight into a number of themes that appear across the 47 cases. The third stage of the paper involves the narrative analysis of a single longitudinal case – Pauline, whom we met in the introduction. Here we focus on the relationship between narrative and social action, which, combined with insights from stages 1 and 2, enables us to reflect critically and productively on the variable logic that was our starting point. The cumulative power of this analysis enables us to comment on *why* there is a relationship between early drug use and school dropout – pointing to the importance of resources, timing, individual agency and the role of others in shaping outcomes.

Stage 1: Using a variable logic to understand the relationship between drug use and educational success

In sampling for the qualitative longitudinal study we wanted to illuminate the social actions behind the black box variable logic that associates drug use and leaving school early. Most quantitative empirical studies on young people's drug use construct a pseudo-narrative where cannabis smoking is assumed to be 'doing all the acting' (Abbott 1992b). To illustrate this we can point to an article by McCaffrey et al. (2010) who convey their hypothesis in the third person: "marijuana use could positively influence *one's* willingness to leave school by reducing *his* or *her* general achievement (through reduced cognitive ability, school attendance, or willingness to work hard and get good grades)" (McCaffrey et al., 2010, p. 5). This is an example of Abbott's contention (1992b) that variable-based analysis assumes that an indicator (like cannabis smoking) has "the same effect for everybody at the individual level, mainly because most statistical models (e.g. regression coefficients) are unable to handle case specific variations" (Blau and Duncan 1967 in Abbott, 1992b, p. 56). However, Pauline's experience (illustrated in the opening quotation) suggests a more complicated and uneven relationship between variables - in her story this involves

being kicked out of school as a result of cannabis use yet as a result of this injustice (in her mind) becoming more motivated to stay in education.

The specificity in Pauline's cases is difficult to handle in quantitative empirical research. Some quantitative methods, such as clustering techniques and multi-correspondance analysis (Duval, 2016) are able to handle outliers and variation and relations between cases. However, they still fall short when handling the semantic ambiguity of indicators. The myriad different processes leading to a person leaving school early would require many case-specific questions in a survey, impossible to ask and analyse statistically. To understand case complexity and process we can turn to qualitative studies, which for example suggest that cannabis smoking can have multiple meanings depending on the context (Järvinen & Ravn, 2011; Ravn, 2019). This specificity in turn challenges our ability to 'create narrative generalizations across cases' (Abbott, 1992b, p. 79).

Sampling for a mixed methods longitudinal study

Before we turn to the variable-based analysis of the 47 young people sampled from the longitudinal survey, we briefly describe the procedure for selecting these cases for the qualitative study. A recent review (Plano Clark et al., 2015) calls for more research and transparency on practical strategies for integrating analysis of longitudinal qualitative and quantitative data, including the question of time (e.g. concurrent or sequential data collection). It is our contention that a reflexive approach to these sampling strategies can contribute to a bridging of quantitative and qualitative paradigms as well as variable and narrative logics.

Overall, our study can be defined as a "retrospective longitudinal mixed method study" (Van Ness et al. 2001 in Plano Clark et al., 2015, p.298), as the longitudinal qualitative data have been collected from 'The Danish Longitudinal Study of Children' (DALSC) (Østergaard & Østergaard 2016). It is a representative cohort survey with 6000 children born in 1995. This is a random sample drawn from the unique Danish Civil Registration System. To date, the cohort study has been conducted six times and at the last data collection in 2014 (age 18) the response rate was 72 %.

To sample the 47 young people for the qualitative interviews we used survey data from two time points – wave 5 (age 15) and wave 6 (age 18). We used a variable-based longitudinal design, constructing two variables and purposively recruiting

participants from each cell (Teddlie & Yu, 2007). One variable, *drug experienced,* was constructed from questions asked in the survey at age 15 (wave 5). We used two indicators measuring heavy alcohol consumption and one indicator measuring frequent cannabis smoking. Heavy alcohol consumption was defined as drinking 5 units of alcohol six times or more within the previous month or drinking 10 units or more 3 times within the previous month. Frequent cannabis use was defined as smoking cannabis 2 times or more within the previous 12 months. The other variable, *school drop out,* was constructed from two questions asked at age 18[2] (wave 6). Our approach was informed by previous research (Entwisle, Alexander, & Olson, 2004) which found different kinds of school drop out (temporary or permanent) to reflect different school experiences. To capture permanent drop out we used an indicator, which measured whether or not the respondents had gone straight from compulsory school (9^{th}/10^{th} grade) to upper secondary education (e.g., high school or vocational training). To capture temporary dropout we used an indicator, which measured whether the respondents had dropped out of any upper secondary educational programme at any point.

The terms 'school drop out', 'early school leaver' and 'educational success' are all used in this paper, reflecting some of the ambiguity around what it is that the variable itself captures – elements that are unpacked in the qualitative analysis. The idea of leaving school 'early' is highly context specific, relating to local norms of peers and parents. Dropping out of school captures the significance of not seeing an educational programme to its conclusion yet also communicates social stigma and implied fatalism on the part of the individual. The attribution of agency in relation to how and why a person leaves school 'early' and the relationship between subjective and more easily measurable notions of educational success are the focus of the case study, and we return to the question of how such phenomena are named and how these categories are then operationalised in our conclusion.

>Insert table 1 here <

[2] At age 15 most people (in Denmark) are still enrolled in compulsory education. Thus in our study (at age 15) we find that 72 % of the young people are enrolled in 9th grade and 23 % are in 8th grade when the survey was collected at age 15.

Table 1 shows the cross tabulation of the *drug experienced* measured at age 15 and early school leaver measured at age 18 among young people who participated in both waves (n= 3630). 17 % of the 15 year-olds can be categorised as *drug experienced*. At age 18, 13 % of the young people could be categorised as *school drop outs.* However, among the drug experienced we find that 21 % are early school leavers at age 18, compared to 11% among young people with little or no *drug experience* at age 15. Thus the association between early drug use and later school drop out is statistically significant (chi 2= 37,04; P = 0,000).

Table 1 also shows how many young people we interviewed from each cell for the qualitative in-depth study. We deliberately aimed at interviewing more young people placed in the cells of *drug experienced* and *school drop out* (e.g. 15 and 12). We aimed for an equal gender representation within each cell and succeeded in this for all cells except one. We conducted 6 interviews with drug experienced men who had left school early. In total, we interviewed 21 young men and 26 young women.

In the survey, the respondents had been asked to share their email or phone number if they were interested in being contacted for further interviews. As we contacted the young people in the autumn of 2015, more than one year after they participated in the latest survey study, we stressed both in writing and in person that they would be recruited to become part of a longitudinal qualitative study investigating young people's transitions to adulthood in uncertain times (Kamp, 2015; Schoon, 2015). In 2018, all 47 participants were contacted again and 34 interviews were completed (14 men and 17 women). At both rounds the interviews were audio-recorded, fully transcribed and anonymised. They lasted between 1.5 to 3 hours.

What are these a case of?

Ragin (1992) has argued that variable-oriented 'large N' studies work with one variable at the time – not with cases. This was also the case here as our point of departure was guided by co-variates between variables, and not cases. But we were still faced with the question of how we move from variables to cases and in the process understanding what these are a case of (Ragin & Becker, 1992)? As Ragin (1992) argues, we need some form of categorisation or *casing* of data to make comparable analyses. This involves thinking about cases as a verb (something we do) as well as a noun (something that is).

We conducted an initial analysis of all 47 participants interviewed in 2015, following the quantitative logic of categorisations. Introducing our second metaphor, these were then cases created by the interplay of the variables – a kind of 'butterfly net'. Our focus was on differences and similarities among the cases, for example educational status and transition, occupation, drug use, parental divorce, living situation. As we began to engage with the interviews associated with these cases we became preoccupied with misclassifications (Thompson, 2004), questioning whether the cases really 'fitted' within the cells, keeping in mind that the participants were interviewed almost two years after they had completed the survey questionnaire. As Table 2 shows, from this simple coding we quickly learned that some categories and hence cells in Table 1 were more incoherent and heterogeneous than others. Below we characterise each cell and the cases within it – framing qualitative insight through a variable-based logic.

From numbers in a cell to cases

Table 2 shows the characteristics of the cases in each of the four cells for the 47 cases according to the variables constructed from the survey *drug experienced* (at age 15) and *early school leavers* (age 18). We have named each table following the variable logic of the cells: A) *Drug experienced early school leavers* captures those 15 cases who reported frequent cannabis use and alcohol use at age 15 and who had left school early or/and dropped out of an educational programme before age 18. B) *Early school leavers* captures those 12 cases who had left school early or dropped out of an educational programme and did not report frequent drug use (cannabis and alcohol use at age 15). C) *Drug experienced students* captures those 10 cases who reported frequent drug use at age 15 and were in education at age 18 (i.e., they have not dropped out of upper secondary school or other educational programmes after compulsory school). D) *Students* captures those 10 cases who had continued their education and did not report frequent drug use at age 15. Respecting the dynamic nature of the data set we also added information about present educational and occupational status and their family situation, using information gleaned from the qualitative interviews conducted at age 19/20 (e.g. 1.5 years after the last survey was conducted). Below we will describe these changes following a variable perspective, comparing the young people cell by cell.

> Insert table 2 here <

Within each cell we find that cases are similar (from a variable perspective). *Drug experienced early school leavers* have all experimented with a variety of drugs such as cocaine, amphetamine and MDMA, and are still more drug experienced at age 19/20 than young people in the other cells. This group is also on a very slow track to graduate from upper secondary education (either the vocational or academic track) and some are not enrolled in any education, but work in the service sector (Magdalena, Carsten). One is unemployed (Astrid).

The *early school leavers* (B) are similar to the *drug experienced early school leavers* (A) in that they are delayed in completing post-compulsory education, but they are also different from cell A as fewer have experimented with illegal drugs at age 19/20. Parental divorce is common among cases in both cells A and B, and within both we also find instances where a parent has died (because of drug abuse or illness). The cases in cells A and B stand in sharp contrast to the cases in the two other cells, particularly cell D, *students* (see table 2) where illegal drug use is not widespread and where most people have graduated from upper secondary school and are either taking a gap-year (assuming university with follow) or are already studying at university. Illegal drug use is part of the biographies of the *drug experienced students* (C) although they have managed to stay in education.

The categorisation of the cases from a variable perspective confirms the finding from the survey (e.g., the co-covariation between the two variables). However, reading the interviews reveals other factors that may also be actively involved in explaining this relationship – for example parental resources, support and intervention in relation choice of school and education.

Stage 2: An analysis of narratives*: from cases in cells to butterflies in nets*

Our next task was to think about the cases as a series of groups – asking ourselves whether these groups had coherence beyond the methodologies used to create them, and whether 'casing' them in this way was productive. This required an analysis of the narratives within each of the cells. Thus two researchers read each of the interviews and identified key motifs of the narratives, focusing on how young people presented their educational trajectories. Here the butterfly metaphor allows us

to ask a number of questions: What kind of person are we capturing with this net? How did they get here? Are these all a case of something bigger?

The analysis of the narratives of the *drug experienced early school leavers* revealed several reports of periods of intense cannabis use. Some were still smoking cannabis regularly and embraced it as self-medication, describing how it made 'all the bad things disappear' (Heidi), 'helping [me] cope and keep on track' (Carsten). Several, however, had given up drugs after periods of intensive use and/or bad experiences (Holly, Magdalene, Tobias, Astrid). Yet, simply giving up drugs did not necessarily enable these young people to get back on track with education. There was a general awareness among young people in this group that they had not achieved a level of education that would be expected of them at this age, some noting that smoking and studying do not mix. Several had changed schools as a result of being caught smoking marijuana in 8th, 9th or 10th grade (Carsten, Astrid, Pauline), while others reported dropping out or switched tracks due to a loss of motivation, boredom, anxiety, fear, not fitting in or feeling right.

We also learned that most of the participants in this group disliked going to school from a very early age. Some struggled to learn, either because of diagnosed or undiagnosed learning difficulties or a lack of motivation. A few young people in this group described themselves as academically able but felt that they were poorly supported or misrecognised by educationalists (Pauline). Some explained that their ability to study was undermined by mental health problems (Carsten, Venessa, Heidi). Others seemed to have struggled with bullying and social isolation.

Finally, we learned of a group of young people who had experienced parental divorce at a young age (usually before 8 years of age), and who had complicated relationships with their parents - sometimes due to a divorce, and sometimes because of the parents' own problems such as mental health problems (depression and parental suicide) and imprisonment. Two young people talked about growing up in alcohol and drug-using families, and fears of repeating family patterns (Pernille, Astrid). In general these young people reported family situations shaped by events beyond their control like parental illness and death, domestic violence, and moving home.

The narratives of the *early school leavers* (B) were not that different from the *drug experienced early school leavers* (A). Here we also found complicated relationships with parents exacerbated by parental divorce, although in this group this typically happened when the young people were in their teens. Similar to those in cell A, events

that young people had little control over (parental mental illness, death, and alcohol abuse) took place at crucial points in the young people's lives. Many of the early school leavers disliked going to school and report being bullied in primary and secondary school. Learning difficulties were also present, but in contrast to the drug-experienced early school leavers (A), we hear about parents stepping in, both in terms of changing schools (for instance to a private school to better accommodate learning difficulties (Finn), or arranging for the young person to change schools because of troubled peers (Elias and Pia). This is also the first time we hear of parents actively seeking drug treatment for their child (Hans), who started to use drugs after age 15 (when he was interviewed for the survey) or parents engaging in explaining the risks and consequences of cannabis use (Mark) escalating after a first initiation at a later age.

In group C, the *drug experienced students*, we find less experimental illegal drug use - in particular of harder drugs like amphetamine, MDMA etc. compared to the drug experienced early school leavers. Two young men in group C, however, do report intensive cannabis use, but also explain that they were able to stop after a short period, either because their parents stepped in (Holger) or because they realised that their cannabis use would jeopardize their educational aspirations (Konrad). Heavy consumption of alcohol is however seen as a manageable part of life, in particular of time off (Erik) with one young man (Bjarne) deliberately choosing his specific university to ensure that he is studying with people who like to party. Others struggle to escape cultures of intoxication (Sanne), echoing the fear of repeating the family pattern of alcohol abuse we encountered with the drug experienced early school leavers.

In contrast to both group A and B, a majority of the *drug experience students* (group C) had graduated from upper secondary school and were on their way to university. Some of the boys (Holger) were on a very slow track towards university which involved repeating years and changing schools in response to the challenges of learning difficulties. As with groups (A) and (B) we find stories of the *drug experienced students* struggling with school, finding it boring, difficult or socially uncomfortable. As with the *early school leavers* (B), parents featured strongly in coaching young people back on track, facilitating changing school in the face of disaffection. For example, Gabriella appeared to be in extended negotiations with her

parents looking for the 'right school' and the 'right people', dropping in or dropping out.

In the group of *students* (D) there were no narratives of parental alcohol or drug abuse. And with one exception (Thomas) we hear no stories of regular cannabis smoking. Neither do we hear about diagnosed learning difficulties or school as a difficult time. And although one person had had a mental health breakdown and was hospitalised for a shorter period, she was quickly back on track and graduates on time. It is telling that none of the parents were divorced, and that overall they appeared very present in the young people's narratives about homework and educational choices (Rikke, Henning, Henrik).

In summary, the analysis of narratives within each cells reveals interesting patterns of similarity and difference. Within both the *drug experienced early school leavers* and the *early school leavers* group we find evidence of marginalised and vulnerable life and family situations. Among all early school leavers illegal drugs are present. While the accounts in group (B) suggest that drugs are introduced later on and for some to a lesser degree, these young people still struggle with their educational choices and transitions. On the other hand, in the second interview at age 23 we learn how some of the *drug experienced early school leavers* manage to put a long period of intensive cannabis use behind them and resume their education. The question we are left with is how the drug experienced students manage to stay on track, given that they are faced with the disruptions associated with heavy drug use at an early age? Our analysis of the narratives points to the importance of parental intervention as a way of slowing down, rerouting and staggering transitions in such a way that the impact of drug taking on educational outcomes is mitigated. But parents are not the only resource available to young people, and 'significant others' also seem to be part of young people's stories of taking control.

Stage 3: Using a narrative logic to understand the relationship between drug use and educational success

For Polkinghorne (1995) and Abbott (1992a, 1997), the narrative level engages with logics, associations and patterns, yet without abstracting these from the specificities of time and place. A narrative analysis is not the same as an analysis of narratives (stage 2 above) or an analysis of variables (stage 1 above). Yet a narrative analysis can be informed by both. Within qualitative longitudinal research, narrative analysis has

been utilised to generate theory, exploring how individual lives unfold as they do, focusing attention on the narration of turning points and complex interaction of agency and structure (Nielsen, 2013; Thomson, 2011; Aarseth, Layton, & Nielsen, 2016). In this final section of the paper we move towards a narrative analysis, working through a single case of Pauline, suggesting how she exemplifies the challenges expressed in the black box (variable)logic characteristic of quantitative studies of the association between drug use and educational success.

Returning to the metaphor of the butterfly net, Pauline can be seen as a butterfly (or case) that is captured by a net (or in a cell) built from combinations of indicators understood in relation to variables linked to concepts (Abbott, 1997). We understand her case both in terms of the net that caught her and others (*the drug experienced early school leavers*), but we can also interrogate her accounts (produced in successive interviews) on their own terms, understanding her narrative as a resource for theorising the relationship between experience, self-knowledge and social action.

Pauline has dropped out of education several times, but at age 20 when we first interviewed her for the qualitative study, she had just graduated from a two-year upper secondary education. When we interviewed her again three years later, age 23, she had completed another (short term) education and was working full time. At this point Pauline was no longer a case of early school leavers. However, smoking cannabis was still part of her life, and at age 23 she described it as something she had under control. She only smoked occasionally when she was alone – to relax – not to be social with friends.

Pauline: a narrative analysis

Pauline's drug narrative starts with a story about not being in control. A group of older boys introduced her to cannabis at an early age (Järvinen & Ravn, 2011), the culmination of a period of experimentation with drinking and smoking cigarettes (the latter she stole from her father aged 8 years old). Initiating cannabis use is also part of a wider story of seeing herself as someone who had trouble in school. Pauline never really liked going to school. She complains about being poorly supported by the school system and the teachers, who from the beginning (2nd grade) failed to recognise her as academically able. She describes how her mother got involved and kept her on track until 8th and 9th grade, where Pauline "*just thought 'fuck you, school!'. I didn't do my homework, I didn't take part in class, I didn't really care. I*

was always late. I just didn't take it seriously". These experiences are from around the same time (age 15) when Pauline responded to wave 5 of the survey; responses that led us to categorise Pauline as a *drug experienced early school leaver*. However, in the qualitative study Pauline told us that she started to smoke cannabis at a much younger age (grade 7). Although her first experience with smoking cannabis was not pleasant – *"suddenly I'm throwing up – out of my window"*, Pauline moved very quickly from initiation to describing herself as a regular user emphasising the sociality and fun associated with smoking together with friends (Becker, 1953; Järvinen & Ravn, 2011):

> Pauline: It was new and exciting, and a lot of fun. We were just sitting there, for hours and hours, one week after another, then two weeks after that. It was actually just like we tried it one day, then the next, then the third day, and we just continued. And then I just continued, and then we had to go to boarding school, and two of them stopped [smoking] and I continued a little.

After graduating from 9th grade, Pauline was not sure what to do. She did not feel ready for the upper secondary education which prepares you for university. Instead she enrolled at a boarding school to complete 10th grade (which is an optional year in Denmark). She describes this in positive terms as it provided her with more time to get ready for upper secondary education. However, she continued to use cannabis at the boarding school and was no longer synchronised with her friends' use; something that in hindsight becomes a significant moment in explaining how she was kicked out, not dropped out school. As we learn from the quote in the very beginning of the paper, Pauline was expelled from the boarding school because of her cannabis use. This was a big loss for her, one that was compounded in her account by a teacher (again) treating her unfairly. Unlike the boys involved in smoking cannabis, she did not get a second chance and the letter that she wrote to the teacher explaining and apologising for her action, was, she tells us, never communicated to other teachers:

> Pauline: "I just felt it was totally a lack of respect, because I had written a letter explaining how I would do everything differently if I was allowed to come back and how sad I was because of it all. And I had really exposed myself or whatever you say, in sending that letter. And then I find out, that he [the

teacher] has not even read it out loud [for the other teachers]. I remember I got really pissed because of this.

Later that year, Pauline started grade 10 again at a different school (not a boarding school) and reported enjoying it. She tells us that at this new school she did not smoke cannabis for at least 4-5 months, breaking a habit that had been part of her life for three years.

Between the two interviews at age 20 and 23, Pauline had worked out that her drug use caused her to lose something that she really wanted (attending a particular boarding school). This was something that she learnt from and which changed her future behaviour. Cannabis use had resulted in involuntary time away from school, a phenomena that we find in other studies as well (see Järvinen & Ravn, 2017). Yet it is important to note that in Pauline's narrative, her cannabis use did not cause her to work less hard or to have learning difficulties. It was being expelled from school that caused her to miss classes, or in other words it was the the response of the school rather than her cannabis use that was the consequential action. Yet, this link is not generally visible in the data nor the narrative logic that makes sense of the variable associations. It is Pauline's narrative that makes this part of the story visible – articulated through fury at the injustice and her certainty that her smoking does not make her stupid or ineducable.

At age 23, we see Pauline's story shifting, as she makes sense of this injustice and takes control over what she knows is not an acceptable act. Writing a letter to her teacher involved Pauline (age 16) asserting her willingness to reduce her cannabis use, a decision she subsequently stood by (to stay at the new 10th grade school) and which by the second interview (age 23) she was still committed to. So even though cannabis at age 23 was an important part of Pauline's everyday life and one that she considered to be her own private business, she was prepared to accept that in order to pursue her educational aspirations she needed to control it. Pauline faced up to the ways in which smoking cannabis and school work did not go well together:

Pauline: This was also why, in the last year of my upper secondary education, I didn't smoke at all. I took it very seriously. And if I did smoke, I was very aware whether there was something I needed to get done, something like an assignment or something I needed to write, coming up. Because, I was like, you know, I

shouldn't smoke while doing exams or midterms. I didn't do that at all because I was afraid I might forget something.

Forrester (2016) argues that 'thinking in cases' is not only a feature of expert discourse, but has become part of a popular culture – as subjects of legal, welfare and medical regimes we learn to understand ourselves through these categories. At age 23 Pauline had ensured that she was no longer a case of educational failure. She had successfully completed two educational programmes and even though she still used drugs, she managed this so that it went under the radar – without drawing the attention of others and jeopardising her situation. She had learnt from experience that education and cannabis 'did not mix'. In narrative terms, she had moved from a position of protest to a more ambivalent and pragmatic position in which she adapted and managed in the face of intransigence and perceived unfairness on the part of the system. In an important way, it is Pauline's ability to understand herself as 'a case' (defined by an association between the stigmatised category of 'school drop-out' and its correlation with drug use) that enables her to adapt and manage her presentation of self .

By looking at a single case we can see something of the conjunctural character (Becker, 1992) of drug use and leaving school early, suggesting that these may be partly coincidental but also can accumulate into patterns and narratives that become hard to disrupt. The longitudinal character of this research further animates our analysis. As time passes between the four moments of data collection, it becomes evident that our sampling is shaped by indicators of past actions. The narratives that emerge from successive interviews speak back to the variable based logic of the survey conducted in the past that identifies individuals to be 'at risk' but also helps us to understand the character of this risk (for example that schools are unwilling to tolerate blatant drug use) and how personal or familial agency mediates the consequences of this situation (see also Ravn, 2019). Pauline exercises formidable intelligence and discipline in reshaping her presentation of self in such a way that (after she was kicked out) she is not noticed in the wrong way – even though this means accepting that her needs are not recognised or addressed. These insights take us into the black box of a variable logic – making sense of the complex relationship between early cannabis use and education dropout – discovering a nexus that includes

unequal resources, timing, recognition and misrecognition and personal agency. This nexus is articulated and made accessible to us in narrative terms.

Conclusion: Thinking through cases to articulate a mixed method longitudinal analysis

In this paper we have moved between quantitative and qualitative perspectives on longitudinal data, facilitated by an awareness of variable and narrative logics. We are clear that these two sets of binaries do not align in simple ways – both narrative and variable logics can operate at different scales – the distant reading made possible by many cases and the close reading associated with a focus on biography. We have juxtaposed two contrasting metaphors: the 'black box' of hidden causality that looks to variables for explanation of outcomes and a 'butterfly net' that understands variables as part of a practical apparatus that captures cases.

Our strategy for bridging the analytic space between variables and narratives has focused on sampling practices. In tracing the three stages of our mixed methods analysis we highlight why and how it can be productive to make the practice of 'casing' explicit, i.e., defining, grouping and comparing cases. The identification of cases using the association between variables constructed from two different time points is itself a first stage of analysis – we hypothesise (on the basis of the quantitative literature) that these things matter. The cases are captured and we look inside the net, conducting biographical interviews to flesh out cases into stories (e.g. "Bringing *life* "back into life course research"" (Nico, 2016: 2107).

Grouped together we can reflect on questions of coherence and incoherence, similarity and difference, variations on a theme – as well as noticing problems that may or may not be due to misclassification. These insights can be cross-referenced with a qualitative literature, anchoring insights generated with special samples and expanding our understanding of the ambiguities associated with variable-based thinking - all essential scaffolding for moving us to a narrative level of understanding. Paying attention to the dynamism and particularity of a single case consolidates this project. Understood as a narrative, the longitudinal case can be exemplary, enabling a mode of generalisation and theory development that is at once specific, explanatory and critical – involving thinking about how cases are made and what they do but also showing that the reflexive art of 'thinking in cases' (Forrester, 2016) is practiced by our research participants too.

This paper aims to observe a series of methodological lessons that arise from this experiment, but also to demonstrate the analytic dividends of working in this way. In this respect the paper makes a contribution to the substantive field of research on drug use and educational success as well as making a contribution to a growing field of mixed method longitudinal research. In concluding, we reflect on the relationship between narratives and social action that is the focus of this special issue.

Longitudinal research brings with it the promise of capturing and interrogating action in the form of continuity, change and maturation – new things happen and can be interrogated in relation to what has happened before and what takes place subsequently (Author 2009). Where research designs combine series of interviews and questionnaires it becomes possible to engage with narrative and its emergent properties at different scales. Life stories anticipate the future and reflect on the past, and when we move through a series of narratives we are able to engage with the past-present-future relationship as a defining characteristic of lived experience. In a sense, this allows us to escape the tyranny of lived time and to explore how futures are *have been* made and in doing so access and integrate the missing understanding that is imagined to be inside the 'black box'. We suggest that this knowledge is of the narrative rather than the variable variety and is not easily abstracted or generalised. Working narratively with a case over time provides a key to this box. Pauline decides that she does not want to inhabit the category 'early school leaver' and she learns that making her use of cannabis invisible is necessary in order for this to happen. In this respect she learns that school administrators are an important mediating factor in the association between drug use and leaving school early. While her biography contains many of the risk factors that accompany this association, her narrative reveals that she has the insight to understand and capacity to absorb the many instances of misrecognition that she feels wounded by, and is prepared to 'pass' in order to complete her education.

In a tradition of longitudinal research that focuses on those who succeed 'against' or 'despite' 'the odds' (Duckworth et al. 2011, Boddy et al 2019) Pauline's case attunes us to the interplay of timing, resources and the contribution of different actors. We are also confronted by the crucial part played by Pauline's agency and creativity, factors that we understand are patterned yet not determined by her environment. Our ability to work at different scales in a mixed method longitudinal study enables us to

understand how we came to catch such a remarkable butterfly, characteristic of her species yet also absorbed in an intense process of self-transformation which if better understood might change our taxonomies.

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Table 1: Quantitative sample in pct. and qualitative sample in brackets

	School drop out age 18	In education age 18*	n
Drug experienced at age 15	21 % (15 cases) A	C 79% (10 cases)	600
Not drug experienced at age 15	11 % (12 cases) B	D 89 % (10 cases)	3030
N	469 (27 cases)	3161 (20 cases)	3630

*In education included young people enrolled in upper secondary education (STX, HTX etc.) qualifying for university and vocational training

Table 2: Drug experienced early school leavers (A), Early school leavers (B), Drug experienced students (C), Students (D)

Pseudo-name	Highest education age 20	Current education/occupation 20 years old	Illegal drug use at age 20	Parents marital status
Drug experienced early school leavers (cell A)				
Mathias	Diploma	Work (abroad)	No	Divorced
Holly	9th grade	Vocational training	Cannabis	Divorced
Magdalene	10th grade	Work (part-time)	Cannabis	Divorced
Tobias	9th grade	Upper secondary	Cannabis, cocaine	Divorced
Astrid	9th grade	Unemployed	Cannabis, cocaine, amph., MDMA	Divorced
Grethe	Diploma	Work	Cannabis	Together
Pernille	Diploma	Work	Cannabis	Divorced
Pauline	Upper secondary	Work (gap year)	Cannabis, cocaine, amph., ketamine	Together
Simon	9th grade	Vocational training	Cannabis, amph.	Divorced
Heidi	9th grade	Upper secondary	Cannabis	Together
Venessa	8th grade	Secondary school	Cannabis, cocaine, amph., MDMA	Divorced
Vicki	10th grade	Upper secondary (single subject)	Cannabis	Divorced
Carsten	10th grade	Work (full time)	Cannabis, cocaine, MDMA, LSD	Divorced
Peter	10th grade	Vocational training	Cannabis, cocaine, amph.	Divorced
Ernst	9th grade	Vocational training	Cannabis, MDMA, cocaine, amph., LSD	Divorced
Early school leavers (cell B)				
Fin	9th grade	Work (full time)	No	Divorced
Henriette	10th grade	Upper secondary (single subject)	No	Together
Helga	10th grade	Sick leave	No	Divorced
Helene	10th grade	Upper secondary	Cannabis	Divorced
Hans	10th grade	Upper secondary	Cannabis, cocaine, amph.	Divorced
Torben	10th grade	Work (full time)	No	Divorced
Pia	Diploma	Student (another diploma)	Cannabis, skunk	Together
Mark	9th grade	Vocational training	Cannabis, amph., MDMA, cocaine, ritalin	Divorced
Elias	10th grade	Vocational training	No	Together
Hilda	9th grade	Upper secondary (single subject)	Cannabis	Together
Hermione	9th grade	Upper secondary (single subject)	Cannabis	Divorced
Gorm	Upper secondary	Work (gap year)	Cannabis	Divorced
Drugs experienced students (cell C)				
Holger	10th grade	Upper secondary	Cannabis	Together
Gabriella	Upper secondary	Work (gap year)	No	Together
Gunvor	Upper secondary	Work (gap year)	Cannabis	Divorced
Konrad	Vocational	Work (with his occupation)	Cannabis	Together
Doris	Upper secondary	Student (short further education)	Cannabis	Together
Gitte	Upper secondary	Unemployed	Cannabis, cocaine	Divorced
Bjarne	Upper secondary	University student	Cannabis	Together
Erik	9th grade	Vocational training	No	Together
Malte	9th grade	Vocational training	Cannabis	Together
Sanne	Upper secondary	Work (gap year)	Cannabis, cocaine	Divorced
Students (cell D)				
Frida	Upper secondary	University student	No	Together
Sandra	Upper secondary	Work (gap year)	No	Together
Solveig	Upper secondary	Work (gap year)	Cannabis	Together
Henning	10th grade	Upper secondary	No	Together
Sune	Upper secondary	Work (gap year)	No	Together
Lærke	9th grade	Vocational training	Cannabis	Together
Thomas	Upper secondary	University student	Cannabis, magic mushrooms	Together
Rikke	Upper secondary	Trainee	No	Together
Marius	10th grade	Vocational training	Cannabis	Together
Henrik	Upper secondary	Work (gap year)	No	Together