Title: UNTANGLING THE RELATIONSHIP BETWEEN FEAR OF CRIME AND PERCEPTIONS OF DISORDER: EVIDENCE FROM A LONGITUDINAL STUDY OF YOUNG PEOPLE IN ENGLAND AND WALES

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Introduction

The link between perceptions of disorder and fear of crime is well established in criminology with a wealth of studies examining how disorder and fear co-relate (for recent reviews see Farrall *et al.*, 2009; Vanderveen, 2006). Many of these studies have argued that perceived disorder leads to subsequent increases in fear of crime, with low level signs of disorder in the local environment signifying to residents that an area is in decline and unable to control deviant behaviour, leading to heightened perceptions of victimisation risk. This ‘disorder perspective’ has since been instrumental in guiding public control policy, with a range of initiatives introduced that aim to tackle low level deviance with the goal of alleviating public concerns about crime.

Yet there is now a growing body of research that has approached this relationship from the opposite direction, examining the ways that local residents come to view disorderly signs in the environment as problematic (Carvalho and Lewis, 2003; Sampson and Raudenbush, 2004; Franzini *et al.*, 2008). Highlighting the socially constructed nature of perceived disorder, this research explores how different individuals’ form different conclusions about the same disorderly cues, based on prior ideological positions and relational concerns (Girling *et al.*, 2000; Jackson, 2004). Whilst not directly embedded within the fear of crime literature, the implication of the contingent nature of perceptions of disorder is that individual concerns about potential victimisation will serve to raise the significance of these ambiguous cues within the environment, which will in turn increase the likelihood of them being interpreted as problematic.

To date, the bulk of the evidence base exploring the link between disorder and fear has drawn on cross-sectional survey data to make these causal claims. Researchers have typically linked survey respondent *perceptions* of disorder with reported levels of fear of crime. This has obvious problems as a rigorous test of either perspective, with no way to untangle how the two judgements are causally linked. As such, it is impossible to say with certainty whether it is perceptions of disorder that shape subsequent levels of fear, or whether it is fear of crime that determines the significance of disorderly cues present within the neighbourhood (Sampson and Raudenbush, 1999; Tseloni, 2007). It also leaves open the possibility that the observed link between disorder and fear is an artefact of the data collection process, reflecting the presence of unobserved external influences that shape levels of both fear of crime and perceptions of disorder.

This paper presents one of the first longitudinal explorations of the link between perceived disorder and fear of crime, providing a clearer picture of how fear and disorder are causally related. Using repeated measurements from the same individuals allows us to examine how individual changes in fear of crime affect subsequent perceptions of the extent of disorder, whilst also exploring whether changes in perceived disorder influence individual concerns about their potential risk of crime. This also enables an examination of the extent that both fear and disorder are shaped by a common set of external influences. The results confirm that perceptions of disorder do act to increase subsequent fear of crime, lending support to the disorder perspective. However, they also demonstrate a weak negative association between prior levels of fear and subsequent perceptions of disorder amongst younger people, suggesting that for this group fear may actually serve to limit future perceptions of disorder, perhaps by restricting the day to day activities of fearful individuals and limiting their exposure to low level disorderly behaviour.

The Disorder Perspective

The most obvious and frequently cited mechanism linking disorder with fear posits that visible and emblematic signs of disorder distort perceptions of risk and, consequently, augment expressed fear. People first witness signs of low level disorder within the local area, before forming opinions about how much of a problem they are and what they signify about the state of the local area. It is these internalised feelings about the extent and nature of disorder which in turn manifest themselves in higher levels of fear or concerns over personal safety.

The disorder perspective has received considerable academic attention, with Wilson and Kelling's (1982) influential 'broken windows' thesis the most prominent development of the initial theory. Here, the important role that unrepaired physical signs of disorder play in eroding community trust and promoting further disorder is emphasised. Wilson and Kelling argued that this erosion of community bonds encourages additional disorderly behaviour amongst residents by providing 'cues' to potential offenders that disorder will be tolerated. At the same time, disorder discourages residents from intervening by fostering the belief that the local community is not well equipped to deal with deviance. For Wilson and Kelling, then, disorder and fear were linked in a feedback loop, with physical signs of disorder promoting increased fear, which in turn leads to more disorderly and deviant behaviour.¹

The notion that visual signs of neighbourhood disorder exert a direct influence on fear of crime has a good deal of *prima facie* empirical support (see *inter alia* Markowitz *et al.*, 2001; Robinson *et al.*, 2003; Taylor, 2001; Wyant, 2008). For example, using three years of data from the BCS aggregated to the neighbourhood level, Markowitz *et al.*, (2001) find a strong effect of disorder on fear, which they argue, feeds back into increasing disorder in the neighbourhood. Controlling for neighbourhood crime rates, they find that the effect of disorder is significantly stronger than that of recorded crime. In a more recent study of 45 neighbourhoods in Philadelphia, Wyant (2008) also demonstrated a significant neighbourhood level relationship between fear of criminal victimization and perceptions of low level disorder, net of other neighbourhood characteristics, which he showed to be mediated through individual perceptions of risk.

Yet the large majority of studies have relied on cross-sectional data. This makes it impossible to determine whether it is perceptions of disorder leading to heightened fear of crime, rather than fear of crime prompting subsequent concerns about disorder. Robinson *et al.*, (2003) provide the only longitudinal evidence to date that explores the link between perceptions of disorder and subsequent fear. Drawing on a two wave panel study and using a multilevel modelling strategy, they demonstrate a strong association between prior perceptions of disorder and subsequent levels of worry about crime, which they argue is proof of a causal relationship (they also demonstrate a weak association with subsequent feelings of safety). However, despite the clear strengths of this study, they failed to allow for the possibility that fear might also be driving perceptions of disorder, with no causal pathway between prior fear and subsequent disorder. They also omit the possibility of common causes of both perceived disorder and fear of crime.

A handful of studies have used measures of disorder that are independent of the survey respondents who provided information on levels of fear to provide a more robust assessment of the disorder perspective. Drawing on data collected through systematic observation of social spaces (Perkins and Taylor, 1996; Sampson, 2009; Sampson and Raudenbush, 2004; Taylor, 2001; Taylor and Covington, 1993) or utilising interviewer assessments of the levels of disorder within the area (Taub *et al.*, 1984; Brunton-Smith and Sturgis, 2011), these studies have identified a considerably weaker relationship with fear of crime. This weak association with more objective measures of disorder, further calls into question the claims of the disorder perspective, leaving open the strong possibility that there are other mechanisms through which disorder and fear of crime might be linked (Perkins and Taylor, 1996; Taylor, 2001).

Interpreting ambiguous disorderly cues

There is now a growing body of research focusing on the contingent nature of perceptions of disorder, and the extent that different individuals interpret disorderly signals in the local area as problematic (Spelman, 2004). Research evidence first pointed to considerable variability in perceptions of disorder from individuals who share the same local environment, demonstrating that perceptions are driven by more than simply the objective incidence of disorder within the local area (see for example Carvalho and

¹ This theory has since formed the basis of Innes' (2004) 'signal crimes perspective', in which he explores the symbolic function of specific disorderly cues which come to be imbued with particular significance by local residents, signalling to them potential future risk of victimisation.

Lewis, 2003; Franzini *et al.*, 2008; Jackson, 2004; Sampson and Raudenbush, 2004; Twigg *et al.*, 2010). This has led researchers to explore the range of other drivers of individual perceptions. For example, Sampson and Raudenbush (2004) demonstrated that perceptions of disorder amongst US citizens were partly driven by commonly held stereotypes about problematic local communities. Focusing specifically on racial prejudices and concerns linked to socio-economic disadvantage, Sampson and Raudenbush (*ibid*) highlighted the contingent nature of individual perception.

Within the UK context, Jackson (2004) highlights the importance of vulnerability and broader social attitudes in shaping perceptions of disorder. Adopting a social-psychological framework, he explores how these existing attitudes “frame and shape how individuals make sense of their immediate environment” (951). Finding higher perceived disorder amongst individuals who hold more authoritarian views about law and order, and those who were concerned about long-term community deterioration, Jackson emphasises the broader social meaning that disorder has for individuals (including concerns about diversity, and the breakdown of community cohesion). Whilst not directly discussed in the fear of crime literature, this contingent nature of individual perceptions leaves open the strong possibility that fear of crime might also act as a driver of perceived disorder, which in turn may further sensitise individuals to local environmental cues, and thus increase the likelihood that individuals will define disorderly behaviour as problematic (Jackson *et al.*, 2010). From this perspective, it is not just the presence of disorderly cues that is important, but also their *significance*, and this significance is driven by individually held concerns about their potential risk of victimization. Those people who are more fearful of victimisation are not just more aware of their local surroundings, they are also more likely to interpret the presence of teenagers and other signs of low level disorder as problematic because of the associated possibility that they might be victimised.

Common causes of disorder and fear of crime

An alternative explanation for the observed correlations between fear and perceptions of disorder is that they are co-determined by unobserved variables (Tseloni, 2007). Given the reliance on cross-sectional data, it is possible that any observed correlation is actually a reflection of them both being embedded within the same measurement procedure, with respondents aligning their assessments of disorder, either consciously or unconsciously, with their expressed level of fear (Brunton-Smith and Sturgis, 2011). There is good reason to believe that this might be the case, with studies of both fear of crime *and* perceptions of disorder regularly reporting associations with the same series of contextual and individual variables including prior victimisation experience, individual feelings of vulnerability, neighbourhood levels of crime and ethnic heterogeneity (see for example, Farrall *et al.*, 2009; Jackson *et al.*, 2010; Sampson and Raudenbush, 2004; Twigg *et al.*, 2010).

To date, Tseloni (2007) provides the only empirical evidence of the extent that fear of crime and perceptions of disorder might be co-determined. Using a simultaneous equation approach, she treats fear and disorder as two linked dependent variables sharing similar causes (she also links in levels of crime, although finds this to be less closely related to fear and disorder). Incorporating basic structural variations between local areas, she accounts for a large proportion of the correlation between disorder and fear, providing strong initial evidence that the two measures share similar determinants. She also notes a considerable remaining correlation between disorder and fear, pointing to the possible existence of further unobserved influences. However, Tseloni is again restricted to cross-sectional data, making it impossible to explore further the nature of the residual correlation. She is also restricted to aggregate level data, leaving open the possibility that a different relationship is operating at the individual level.

Hypotheses

In summary, whilst the majority of recent research has suggested that perceptions of disorder result in subsequent fear of crime, there is a growing interest in the socially constructed nature of perceived disorder and the extent that fear of crime might be the lens through which disorderly cues are defined as problematic. The reliance of many studies on cross-sectional data from single samples of survey respondents, and the weak link between independently measured signs of neighbourhood disorder and fear of crime reinforces this contention, whilst also leaving open the possibility that they are co-determined by external forces. These alternative mechanisms through which fear of crime and perceptions of disorder might be linked are specified more formally in the following testable hypotheses:

- H1. There is a positive correlation between prior perceptions of disorder, and current levels of fear
- H2. There is a positive correlation between prior levels of fear, and current perceptions of disorder
- H3. Fear of crime and perceptions of disorder are co-determined by external influences

The Current Study

To explore the relationship between fear of crime and perceptions of disorder in more detail, we draw on data from the Offending Crime and Justice Survey (OCJS). This is a nationally representative panel study of young people resident in England and Wales. By asking a cohort of people about their levels of fear and the extent they perceive disorder at multiple time-points, for the first time we are able to untangle the causal pathways through which fear and disorder are linked. This gives us a unique perspective on the complex interplay between perceptions of the local environment, and judgements about possible risks of crime.

Data

The OCJS was originally commissioned by the Home Office as a self reported offending survey (Hamlyn *et al.*, 2003). Running for four years between 2002 and 2006, the study consists of a core panel sample of approximately 5,000 respondents aged 10-25 who were interviewed on four separate occasions. Crucially, at three of these time-points (waves 2, 3 and 4) individuals were also fielded a series of questions about their levels of fear and perceptions of low level disorder, providing us with a unique resource to begin to unpick the complex relationship between fear and disorder.

The restriction of the sample to those aged 10-25 makes the OCJS quite different to the majority of nationally representative social surveys conducted in England and Wales (where sample ages typically range from 16 to 90+), opening up the possibility that the association between disorder and fear will be different from those based on the full age distribution. Whilst no evidence currently exists to suggest that the strength of the association between disorder and fear is moderated by age, and only weak evidence that age is a predictor of fear or disorder (see for example, Chaddey and Ditton, 2003; Sampson and Raudenbush, 2004), the inclusion of very young individuals in our sample makes it plausible that the relationship between disorder and fear will vary within our cohort. The lived experiences of those aged 10 years old seems likely to be very different to those aged 25, potentially manifesting in a different relationship between perceptions of disorder and fear. To allow for this possibility we adopt a split sample design distinguishing those aged 10-15 and those aged 16-25 at the time of the initial interview (reflecting the typical lower age boundary of sample surveys). Here, the rationale is that those in the older cohort should more closely resemble the general population, whilst the experiences of younger individuals may differ systematically (perhaps because low level signs of disorder have a different resonance, one that is not based on direct experience).

At each time point there are relatively low levels of attrition from the core panel, with response rates of 82% at the second wave, 84% at wave three, and 86% at wave four (Hamlyn *et al.*, 2005; Phelps

et al., 2006; 2007). Across the three waves of data utilised in this analysis, this results in an analytic sample of 1,884 aged between 10 and 15, and 1,495 aged 16 to 25.

Measuring fear of crime and perceptions of disorder

Fear of crime is measured using three items assessing levels of ‘worry’ about different types crime (all items are measured on a four point Likert-scale ranging from ‘not at all worried’ (1), to ‘very worried’ (4)):

1. How worried are you about your home being broken into and something stolen?
2. How worried are you about being mugged or robbed?
3. How worried are you about being physically attacked by strangers?

These three items were combined using an ordinal confirmatory factor analysis strategy (Muthén and Muthén, 2007) to form a single latent measure of overall fear, with factor loadings of .71, .95, and .89 for each item respectively (when assessed jointly across all three waves of data). Using a latent variable approach adjusts for measurement error present in these items, with each indicator assumed to be an imperfect measure of the underlying level of fear (Bollen, 1989).

To measure perceptions of disorder, we combine data from 6 items measured as dichotomies between the presence (1), or absence (0) of different forms of disorderly behaviour:

1. Noisy neighbours
2. Teenagers hanging around causing problems
3. People sleeping rough on the streets or in other public places
4. People being harassed in the street (because of their skin colour)
5. People using or selling drugs
6. People being drunk or rowdy in public

These items were combined following Item Response Theory (Boomsma *et al.*, 2001) to form a single latent measure of disorder, with factor loadings of .45, .60, .54, .68, .80, and .76 for each item respectively (Muthén and Muthén, 2007). This is a variant on traditional measures that require respondents to indicate *how much of a problem* these forms of behaviour are within the local area. However, whilst we lose the fine-grained quantification of the *meaning* of low level disorder for each individual, this still allows us to distinguish the *extent* that individuals do and do not perceive disorderly cues within the local environment.²

A crucial assumption of longitudinal modelling is that we are measuring the same constructs at each time point, with only their *levels* changing over time (Sturgis *et al.*, 2004). To test this, the measurement equivalence properties of the two latent variables were assessed across time (Meredith, 1993). This revealed that both fear of crime and perceived disorder exhibited equivalence over time when compared against an unconditional model (with a χ^2/df difference test of 1.68).

Cross Lagged Panel Models

To model the relationship between fear of crime and perceptions of disorder, a cross-lagged panel design is adopted (Campbell and Kenny, 1999; Finkel, 1995). This explicitly models the pathways through

² Reporting on results from a small pilot study, Sampson and Raudenbush (2004) demonstrate that the presence and significance of disorderly cues are largely synonymous when assessed using standard empirical measures, therefore it is unlikely that this will have a large impact on results.

which fear and disorder are linked over time, providing a direct test of their causal relationship. For simplicity, we present only the structural paths between fear and disorder (figure 1), however in reality we are estimating these simultaneously with the latent measurement models outlined above. The factor loadings and thresholds for each observed indicator are constrained to equality over the three time points, ensuring equivalency over time (Meredith, 1993).³ All models were fitted using the Mplus software package (Muthén and Muthén, 2007).

Insert figure 1 here

Here we assume that our measures of fear and disorder at time t are a function both their lagged value at time $t-1$, and the lagged value of the other latent construct measured at $t-1$ (the cross-lagged effect). In other words, an individual's fear of crime will be influenced by their prior levels of fear (path β_{f1}), but may also be influenced by their perceptions of disorder at this earlier time point (path β_{f2}). Similarly, the amount of disorder that an individual perceives in an area will be a function of both their prior levels of perceived disorder (path β_{d1}), and their level of fear of crime at this earlier time (path β_{d2}).

The pathways between the same latent construct at different time points represent the stability of each construct over time (also referred to as the autoregressive effect). Adjusting for these stability effects, the lagged effects (β_{f2} and β_{d2}) represent the extent that prior perceptions of disorder predict *changes* in fear, and the extent that prior fear predicts *changes* in disorder. These path coefficients are constrained to be equal across waves, so that they represent the 'average' stability and lagged effects over the three year duration of the panel (Sturgis *et al.*, 2004). This reflects the assumption that these causal influences are likely to remain fairly stable over the relatively short time period between waves, rather than operating in a cyclical fashion (Gollob and Reichardt, 1987).

To assess for the impact of unobserved variables that may be causing variations in both fear and disorder and adjust for potential omitted variable bias, the disturbance terms ζ_f and ζ_d for our two endogenous latent variables are allowed to covary at each time point (represented by the double headed arrow). The covariances between adjacent disturbance terms for the same endogenous variable were also tested, adjusting for the possibility of a stable unobserved cause of the variable in question (Sturgis *et al.*, 2004). In practice no significant correlations were evident between disturbance terms over time, so these additional parameters were omitted from the final model.

A number of time invariant and time varying control variables are also included.⁴ Alongside respondent gender and ethnicity, we include socio-economic status, length of residence, and the extent of social networks (number of friends and family in the area) as time invariant controls at time 1.⁵ A measure of victimisation experience in the last year is included at each time point, along with an indicator of whether the individual has themselves been involved in any forms of anti-social behaviour during the year. A measure identifying whether the individual regularly goes out in the evening is also included to allow for differing levels of exposure to disorderly cues within the area.

Results

³ The residual error for each indicator variable is also allowed to co-vary with itself across measurement occasions, which ensures estimates of the causal pathways are not biased upwards by shared measurement error (Williams and Podsakoff, 1989).

⁴ These typically have little direct impact on the estimates of the lagged effects, but do further adjust the magnitude of the correlations between endogenous latent variables at each time point.

⁵ Technically, it is possible for socio-economic status and extent of social networks to change over time. However, in practice these remained largely stable across our sample therefore for simplicity we assume stability. Length of residence also increases over time, but the rate of change is uniform across all respondents so does not contribute to the unexplained variance in disorder and fear at time 2 and 3.

Table 1 details the percentage of young people reporting high levels of perceived disorder or worry about crime across the three waves of data. Amongst both cohorts, worry about all three crime types is falling across all three time points. 12% of those aged 10-15 report feeling very worried about burglary at wave 1, falling to 6.4% by wave 3. Higher proportions report being worried about mugging and physical attack (15.9% and 18.1% respective), with both dropping by approximately 50% by wave 3 (to 7.9% and 9.5%). A similar picture is evident amongst the older cohort, although a smaller percentage of this group are initially identified as very worried about each crime type. Turning to perceptions of disorder, more notable differences are evident across the two age groups, with considerably more older participants reporting exposure to 3 or more disorderly cues in the last year (28.6% in 2004 compared with 12.8% of the younger sample). This is a large difference that likely reflects an increased opportunity for exposure to disorderly cues amongst the older age group, highlighting the importance of treating these two groups of individual separately.

Insert table 1 here

Table 2 includes estimates from the included time invariant and time varying controls. For both cohorts the effects follow a similar pattern to those from existing literature, with lower levels of fear and perceived disorder amongst men and those of higher socio-economic status. Non-whites are identified as significantly more fearful than white respondents, although no equivalent differences in levels of perceived disorder is evident. The presence of more friends in the local area has a non-uniform effect on fear and disorder, with those with stronger friendship networks reporting significantly lower levels of fear, but an increased perception of disorder within the area. Turning to the time varying controls, fear and perceptions of disorder are significantly higher amongst those who have been a victim of crime at each time point. Those who are themselves involved in anti-social behaviour are identified as perceiving more low level disorder within the local area, but are not identified as more or less fearful of crime. Finally, those who report regularly going out in the evening generally also report lower levels of fear at each time point (although the effect is only identified as significant amongst those older group).

Insert table 2 here

To explore how *individual* perceptions have changed over time, figure 2 and 3 include summary results from the longitudinal part of the model for the 16-25 and 10-15 cohorts respectively. These detail the magnitude of the average stability and lagged coefficients for both disorder and fear of crime. They also include estimates of the covariances between the disturbance terms at each time point. For brevity, model thresholds, factor loadings, and correlated errors for each survey item, as well as residual variances for the latent variables, have been omitted.⁶ Considering the overall fit of the model, standard goodness of fit measures are all well within acceptable limits (Bollen and Long, 1993). As a result, there is good reason to believe that the models represent an appropriate simplification of the complex pattern of associations between fear of crime and perceptions of disorder.

Insert figure 2 and 3 here.

Looking first at the relationship between prior perceptions of disorder and current assessments of fear, we find a consistent positive relationship across the three waves of data in both cohorts (.072 for the older group and .071 amongst those aged 10-15). Perceiving more disorderly signs within the neighbourhood at an earlier time point leads to significantly higher levels of fear a year later. But the effect is relatively small when compared to many existing studies. This may reflect the high stability coefficients for fear (.666/.693) and disorder (.759/.788) between time points, indicating that levels of fear and disorder are generally stable over time, at least in the relatively short timeframe of the current analysis. As a result,

⁶ These are available from the author on request.

those judged to be more fearful of crime at a time 1 will also tend to be more fearful at subsequent measurement occasions, and those reporting more signs of disorder at earlier time points will continue to report these as a problem when asked again.

The picture is less clear when considering the effect of prior levels of fear on subsequent perceptions of disorder. Looking first at those aged 16-25, no significant differences in perceptions of disorder are evident for those that were identified as more fearful at an earlier time point. As a result it seems unlikely that fear of crime plays a central role in raising awareness of local environmental cues, at least when considered in the short term. In contrast, when considering the younger cohort, the effect of prior levels of fear on perceptions of disorder operates in the reverse direction to expectations (-.041). Those who are initially more fearful will actually see *less* disorderly problems in the local area when re-interviewed.

But what of the common cause model? The consistent effect of prior victimisation experience on both fear and disorder demonstrates the existence of other common drivers of fear and disorder. In addition to this observed effect, the covariances between disturbance terms for fear and disorder at each time point highlight the existence of further common unobserved causes of both fear and disorder (with covariances of .083, .034 and .54 for those aged 16-25, and .091, .027 and .062 for those aged 10-15). Following previous literature, this might reflect assessments of the physical environment, and neighbourhood cues including crime and objective levels of disorder (Brunton-Smith and Sturgis, 2011; Jackson *et al.*, 2010).

Discussion

This analysis provides an important insight into the directional nature of the relationship between fear of crime and perceptions of disorder, with the panel design enabling the empirical assessment of the causal pathways through which fear and disorder are related. This reveals that levels of fear are indeed driven, at least in part, by individual perceptions of the extent of low level disorder in the area, with increases in the extent of disorder that people witness resulting in higher levels of fear. That the effect is so consistent across the cohorts suggests that the impact of perceived disorder on fear is stable across the age distribution, and consequently we might reasonably expect to see a similar relationship if data were available from those older than 25.

In contrast, we find no evidence for the alternative pathway. In the short term at least, fear of crime does not serve to raise the salience of ambiguous neighbourhood cues. In fact, for younger respondents the effect even operates in the opposite direction, with those who are more fearful of crime subsequently perceiving fewer disorderly problems in the local area. While it is difficult to draw too many conclusions about this observed negative relationship from the current data, one plausible explanation can be found in existing fear of crime literature. Research focusing on the impact of fear of crime has suggested that higher levels of fear are associated with a greater tendency for individuals to withdraw themselves from community life, ultimately resulting in the atomization of local communities (Hale, 1996). People adjust their behaviour to avoid fear inducing local areas, and restricting their movements at particular times of the day (Adams and Serpe, 2000; Woldoff, 2006). By limiting their exposure to risky situations, *ceteris paribus* these individuals may also be restricting their exposure to disorderly behaviours, leading them to report observing less disorderly behaviours at subsequent interviews. Returning to the wording of our disorder indicators, this mechanism seems plausible, with respondents required to indicate the presence or absence of each form of disorder within the local area, rather than provide a value judgement about it.

These results also identify a substantial residual correlation between disorder and fear, pointing to the existence of common unobserved causes of both constructs. With more detailed information about the broader environmental context in which both fear and disorder are experienced, it would be possible to explore in more detail the nature of these common causes. Existing research has demonstrated the existence of links between objective signs of neighbourhood disorder and perceptions of disorder and

fear, as well as levels of recorded crime and the structural characteristics of the environment (Brunton-Smith and Sturgis, 2011; Farrall *et al.*, 2009; Sampson and Raudenbush, 2004; Taylor, 2001). Incorporating these alongside longitudinal data on fear and disorder would allow researchers to explore in depth how people come to conclusions about the nature of disorder in the local environment, and the extent that this impacts on assessments of risk.

However this study is not without its limitations. The OCJS was conducted over a relatively short time-period with the three waves of data used in the current analysis each a year apart. Whilst this has some clear advantages for limiting the extent that changes in the broader environmental context might contribute to differences in both fear and disorder (we might expect higher correlations between disturbance terms if data were taken at greater intervals), it also means that there is relatively little residual variation in fear and disorder between each time point. Over a longer time period, environmental conditions may be expected to change more, potentially leading to more noticeable shifts in perceptions of disorder and levels of fear. With more waves of data, more complex patterns of association between fear and disorder could also be examined, rather than restricting the focus to examinations of average effects. The restriction to those 10-25 also makes it difficult to draw inferences to the wider population. Despite identifying a reasonably high level of consistency in the nature of the relationship between fear and disorder across the age range, the possibility remains that over the life-course the salience of disorderly cues in the environment may change, or that concerns about potential victimisation may take on additional significance.

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Figure 1. Cross-lagged panel model

Table 1. Percent reporting high level of perceived disorder or worry about crime

	Age 10-15			Age 16-25		
	2004	2005	2006	2004	2005	2006
Perceive high level of disorder ¹	12.8	14.8	17.5	28.6	24.7	25.7
Very worried about being the victim of burglary	12.1	8.3	6.4	9.1	7.4	7.2
Very worried about being the victim of mugging	15.9	10.4	7.9	9.2	5.8	5.1
Very worried about being the victim of physical attack	18.1	12.2	9.5	10.3	6.5	5.4

¹ 3 or more problems in local area

Table 2. Time invariant and time varying controls

	Aged 16-25		Aged 10-15	
	Fear	Perceived disorder	Fear	Perceived disorder
TIME INVARIANT				
Male	-0.386 **	-0.115 **	-0.246 **	-0.104 **
Non-white	0.191 **	-0.078	0.166 *	-0.080
Time lived in area (years)	-0.004	-0.002	0.022	0.026 *
Number of relatives in area	0.008	0.044 **	-0.001	0.020
Number of friends in area	-0.070 **	0.045 **	-0.064 **	0.039 **
HRP NS-SEC (ref: Routine/semi-routine)				
Managerial	-0.238 **	-0.267 **	-0.480 **	-0.349 **
Professional	-0.185 **	-0.155 **	-0.346 **	-0.223 **
Intermediate occupations	-0.112	-0.152 **	-0.200 *	-0.109
Small employers	-0.181 **	-0.219 **	-0.328 **	-0.331 **
Lower supervisory	-0.079	-0.103	-0.126	-0.123 **
Neverworked/unclassified	-0.268 **	-0.075	-0.340 **	-0.155 *
TIME VARYING				
Wave 1				
Victim of crime in past year	0.216 **	0.238 **	0.142 **	0.178 **
Committed ASB in last year	-0.053	0.126 **	0.060	0.166 **
Regularly go out in the evening	-0.117 **	-0.053	-0.215	0.000
Wave 2				
Victim of crime in past year	0.155 **	0.095 **	0.198 **	0.172 **
Committed ASB in last year	-0.051	0.059	-0.045	0.126 **
Regularly go out in the evening	-0.055	-0.035	-0.124	0.121
Wave 3				
Victim of crime in past year	0.202 **	0.186 **	0.136 **	0.187 **
Committed ASB in last year	0.003	0.022	-0.060	0.119 **
Regularly go out in the evening	-0.140 **	-0.057	-0.081	0.179 **

* p<(.05)

** p<(.01)

Figure 2. Cross-lagged panel model (age 16-25)

Figure 2. Cross-lagged panel model (age 10-15)