



# Wellbeing in the aftermath of floods

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## ABSTRACT

The interactions between flood events, their aftermath, and recovery leading to health and wellbeing outcomes for individuals are complex, and the pathways and mechanisms through which wellbeing is affected are often hidden and remain under-researched. This study analyses the diverse processes that explain changes in wellbeing for those experiencing flooding. It identifies key pathways to wellbeing outcomes that concern perceptions of lack of agency, dislocation from home, and disrupted futures inducing negative impacts, with offsetting positive effects through community networks and interactions. The mixed method study is based on data from repeated qualitative semi-structured interviews (n=60) and a structured survey (n=1000) with individuals that experienced flooding directly during winter 2013/14 in two UK regions. The results show for the first time the diversity and intersection of pathways to wellbeing outcomes in the aftermath of floods. The findings suggest that enhanced public health planning and interventions could focus on the precise practices and mechanisms that intersect to produce anxiety, stress, and their amelioration at individual and community levels.

## 1. Introduction

Flooding represents a major environmental risk for many countries around the world with potentially devastating effects for human lives, health and livelihoods. The frequency and severity of floods are increasing in many global regions due to land development and processes of climate change, which are set to increase the intensity of rainfall (Smith et al., 2014; Watts et al., 2015). In the UK, for example, recent projections for increases in flooding as a result of development processes, land management, and climate change have contributed to heightened concern about the impacts of future flood events (Committee on Climate Change, 2015).

A substantial body of evidence has established that floods have direct health impacts such as the risk of death and injury, disease outbreaks, such as gastroenteritis, and water quality issues (Alderman et al., 2012). But floods are also a deeply traumatic experience for those affected. Multiple studies highlight higher occurrences of mental health issues (such as anxiety, depression and post-traumatic stress disorder) in populations that have experienced flooding (Ahern et al., 2005; Carroll et al., 2009; Stanke et al., 2012; Alderman et al., 2012; Fernandez et al., 2015). Research further documents some of the factors that exacerbate the mental health consequences of flood experience, such as the flood duration, the economic and social consequences of recovery, and the emotional labour involved (Fordham and Ketteridge, 1995; Medd et al., 2015; Tapsell et al.,

2002; Tapsell and Tunstall, 2001, 2008; Whittle et al., 2012). Although the socio-psychological health impacts of floods have long been established, most empirical studies have focused on analysis of single outcomes or particular factors that affect psychological health. Less attention has been given to analysis of how multiple factors and processes combine to contribute to wider wellbeing outcomes.

Wellbeing has formed an increasing focus in the literature concerned with issues of psychological health. As a concept it constitutes a broader category for understanding the healthiness of people, taking into account subjective notions of happiness, as well as physical and psychological components of health. The forms of analysis utilising the concept can be broadly divided into positivist and interpretive approaches. Where the former seeks to operationalize a universal conception of human wellbeing, the latter adopts a relational understanding focusing on the subjective experience of wellbeing in place (White, 2010). Here we adopt a relational approach treating wellbeing as something that is socially and culturally constructed, and rooted in particular times and places (Atkinson et al., 2012). Our focus is thus on investigating wellbeing as emerging through relationality with others, including other people, places and material environments. In this respect we treat wellbeing as something that is actively constituted through the interplay of personal, social, and environmental processes.

The paper develops an in-depth analysis of wellbeing in the aftermath of a major flood event and examines four key social processes that have been shown in the previous literature to have

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relevance for understanding how people experience socio-environmental change. The first concerns how wellbeing impacts develop and manifest over time after being affected by environmental disasters. Here the literature is relatively limited in terms of longitudinal analysis but studies that have been undertaken suggest that psychological health impacts are evident over the long-term (Bailey et al., 2006; Tapsell and Tunstall, 2008; Medd et al., 2015). Research more widely looking at responses to trauma over time indicates that, in general, people improve as time passes (Norris et al., 2009). The second process relates to the role of social networks and social capital as an indicator of social resilience (Adger, 2003). The role of individual and community resilience as a response to various dimensions of flooding has more recently become the focus of policy and research (e.g. Twigger-Ross et al., 2011; Begg et al., 2015), but only with only limited attention given specifically to the community and relational aspects of wellbeing.

The third dimension concerns people's perceptions of agency and processes of institutional response. Public perceptions have been highlighted elsewhere as important in understanding public responses to flooding both more generally (Adger et al., 2013; Butler and Pidgeon, 2011) and specifically with regards to health impacts (Tapsell and Tunstall, 2008). We examine, then, how perceptions of institutional responses and feelings of agency in post-flood contexts influence wellbeing. Finally, we look at the processes by which people make sense of their experiences of flooding, focusing, in particular, on the role of responses to change and perceived futures for wellbeing. This concept has not been the subject of focus in the analysis of disasters and flooding but has been explored in other contexts to explain responses to processes of change and trauma more generally (e.g. Ivinson and Renold, 2013).

Through the paper we advance an analysis of these different social dimensions that have been identified as having a role in explaining wellbeing, and take the field forward by examining the interconnections between them in a context of socio-environmental change. Understanding the connections, associations and contextual issues that underlay public experiences offers an important means for thinking through potential difficulties and opportunities in mitigating the impact of floods on wellbeing.

The empirical data comes from two complementary phases of data collection. The first is a set of in-depth intensive longitudinal repeat interviews conducted with a sample of those directly affected by floods in the winter 2013/14 in the English county of Somerset. The second source is a set of data from a structured survey of two populations affected by the same winter floods: Somerset, England and the town of Boston in Lincolnshire, England. The analysis examines key processes that underlay individual and relational aspects of wellbeing and shows how these intersect to influence how flood impacts are ultimately experienced.

## 2. Floods, health, and wellbeing

Much evidence highlights that the consequences of flood events are not limited to physical health and mortality or communicable diseases. Research points to long-lasting effects on mental health and wellbeing, including stress, anxiety, depression and post-traumatic stress disorder (e.g. see Tapsell and Tunstall, 2008; Ahern et al., 2005). Incidents of common mental health disorders and post-traumatic stress disorder (PTSD) have been shown to be higher in flooded populations than non-flooded groups. Evidence relating to this finding generally comes from large-scale medical and epidemiological research on flood events across the world (e.g. Ahern et al., 2005). However, focussing on mental health through the use of medically defined responses leads many studies to under-emphasise the diversity of mechanisms by which wellbeing more widely is affected.

Though the majority of research concerned with psychological health and wellbeing after floods has focused on quantitative medical scales, several in-depth qualitative studies have advanced explanation

of the processes that influence mental health and wellbeing. For example, Werritty et al. (2007) highlight how flood victims can both fear returning to their homes in case of further flood events, and show concern about not being at home should another flood event occur. Similarly, Tapsell et al. (2002) discuss how people who have been flooded speak about regularly checking river levels and report feelings of anxiety when it rains.

Other studies have highlighted how flood events can alter residents' sense of place in relation to the home, community, and local area (e.g. Tapsell and Tunstall, 2008; Carroll et al., 2009; Sims et al., 2009), with negative implications for health and wellbeing. Sense of place in this context relates to the ways that the once private home becomes less secure and no longer a place of refuge after being invaded by floodwaters (Tunstall and Tapsell, 2008; Harries, 2008; Sims et al., 2009). The violation of home intersects with the breaking of place attachments through the changes to flooded properties and the loss of personal possessions, which give rise to feelings that repaired houses are no longer homes (e.g. Carroll et al., 2009), further negatively impacts the wellbeing of those affected.

In this research, wellbeing is taken to encapsulate mental health issues (such as stress and anxiety) as well as wider dimensions of emotional distress, happiness, and life satisfaction (e.g. MacDonald et al., 2015). We use a conception of wellbeing that includes individual elements as well as relational dimensions of value that give meaning to lived experiences in order to interpret and examine the processes that influence outcomes (Atkinson, 2002). The current analysis goes further than previous studies in seeking to understand the interconnection between the different processes that can be seen to impact wellbeing, including the influence of community and relational dimensions.

Woven through the literature on social dimensions of floods is evidence of the protective nature of different dimensions of social capital, such as strong familial bonds, and the potential for such capital to ameliorate the negative consequences of environmental risks, at both individual and community scales (e.g. Adger, 2003; Aldrich, 2012; Wind and Komproe, 2012; Wickes et al., 2015; Paul et al., 2016). Social capital has increasingly been measured as a set of key components, including trust, reciprocity and mutuality, shared commitment and belonging, and formal and informal social networks. Major concepts are those of *bonding*, which refers to the strength of connections between people who already know one another, and *bridging* and *linking* capital, which denote the value of wider (often weaker) social ties to people or groups in different positions of power (Szreter and Woolcock, 2004). The existence of these components within any given community is held to signify high levels of social capital that manifest as social resources a person or community is able to draw on to meet certain goals.

A positive relationship between individual social capital and wellbeing has been established in previous research (De Silva et al., 2005). In relation to post-disaster recovery specifically, studies highlight the role of strong community relations in promoting wellbeing. Evidence suggests community networks can be strengthened by the event itself, rather than simply representing a pre-existing resource (see Twigger-Ross et al., 2011). The availability of social support, skills and knowledge, which people can draw upon throughout the recovery process, has the potential to reduce the negative impact on wellbeing (Werritty et al., 2007). But social capital is not uni-directional and inclusive. At the community scale, social capital can be exclusionary as much as inclusionary (e.g. Wind and Komproe, 2012). Divisions within a community can also be heightened at times of trauma, perhaps through perceived injustices in the experience of different groups or how certain groups are treated during the recovery phase (see Werritty et al., 2007; Adger et al., 2016).

In this paper we discuss the processes and issues that impact wellbeing in the aftermath of a major flood event. We distinguish four different social dimensions or processes and discuss how these interconnect to influence wellbeing. The analysis highlights how wellbeing

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