Summary

Overweight and obesity are major public health problems. Socio-ecological models posit that obesity-related behaviours, the direct drivers of weight status, are influenced by both individual-level and environmental-level factors. However, little is known about the characteristics of ‘obesogenic environments’; environments that promote physical inactivity and unhealthy eating. The overall purpose of this thesis was to provide better insight in the role of environmental factors of obesity-related behaviours and obesity. We studied four types of environmental factors potentially related to obesity: the physical environment (what is available), the social environment (social support, cultural differences), the economic environment (costs) and the political environment (the rules).

We conducted a review of the scientific literature on associations of physical environmental factors with adult weight status, stratified by continent and mode of measurement, accompanied by a detailed risk-of-bias assessment. Only two factors, urban sprawl and land use mix, were found to be consistently associated with weight status, although only in North America. We concluded that, with the exception of urban sprawl and land use mix in the US, studies to date do not allow robust identification of ways in which that physical environment influences adult weight status, even after taking into account methodological quality. Using data from the SPOTLIGHT study, we aimed to get a better insight into the interaction between perceived barriers towards physical activity and healthy eating and local availability of opportunities (neighbourhood destinations) in relation to obesity-related behaviours in adults. We found that the presence of destinations influenced obesity-related behaviours most among those perceiving more barriers. We also examined the individual and contextual correlates of socioeconomic inequalities in neighbourhood perceptions across five urban regions in Europe. Results suggested that objectively observed physical environmental factors and neighbourhood-level social cohesion could explain part of these socioeconomic differences. Using data from the population based, cross sectional Fenland Study, we found that participants living farthest away from a supermarket and having lower education were over 4 times more likely to be obese, relative to those highest educated and living closest. Finally, we aimed to explore the mediating role of perceived presence and use of fast food outlets and fast food consumption in the association between access to geolocalised fast food outlets and obesity. Results showed that objectively observed accessibility to fast food outlets was not directly associated with fast food consumption or obesity. However, perceived presence and use of fast food outlets was associated with higher levels of fast food consumption.

We also conducted a literature review on the associations between the social environment and adult weight status. The strongest associations with weight status were found for social capital and collective efficacy, although few studies found significant associations. We additionally found that there was substantial heterogeneity in the definitions and metrics of psychosocial environmental constructs. Using the SPOTLIGHT study, we aimed to identify the association of ‘truly contextual’ social constructs with obesity-related behaviours, obesity and self-rated health. Higher levels of social network and social cohesion were associated with better self-rated health, lower odds of obesity and higher fruit consumption, but also with prolonged sitting and less transport-related physical activity. The construct that appeared to represent contextual variation best (an average neighbourhood score, adjusted for individual scores) was associated with physical activity and sedentary behaviours only. We then examined the associations between several social network characteristics and obesity-related behaviours in Dutch adults and explored whether similarities in behaviours between individuals and their network members, or perceived social support, could explain these associations. We found that individuals with more intense relations, more friends (nearby), a larger network and a denser network had healthier higher vegetable consumption, higher levels of physical activity and lower levels of
sedentary behaviour. However, perceived social norms or perceived support for change were not related to obesity-related behaviours and the behaviours of individuals and their network members were not alike. Finally, we explored whether social capital mediated the association of neighbourhood income inequality with individual BMI. Results from the formal mediation analysis demonstrated that neighbourhood social networks explained 46% of the association between neighbourhood income inequality and BMI.

With regard to economic environmental correlates, we first assessed whether dietary costs were more strongly associated with fruit and vegetable intake in individuals with lower socioeconomic position than in individuals with higher socioeconomic position. Using data from the Fenland Study, we found that socioeconomic differences in fruit and vegetable intake were larger among groups who consumed lowest-cost diets. Then, we hypothesised that geographic access (proximity) to supermarkets would not be associated with better dietary quality unless economic access (affordability) is taken into account. Healthier diets were more costly and individuals living closer to the nearest supermarket had healthier diets. Yet, economic accessibility of supermarkets was even stronger associated with diet quality.

Finally, we examined the potential for urban land-use and public transport policies to increase the share of active commuter trips in the Wellington Region in New Zealand. Several land-use and transportation factors were associated with active commuting and results from the modelling showed a potential increase in active commuting following an increase in bus frequency and parking fees.

The findings from this thesis suggest that environmental correlates are important factors for obesity-related behaviours and obesity. The obesogenic (residential neighbourhood) environment may be defined as a lack of destinations, lack of social cohesion and social networks, lack of public transport facilities, and lack of affordable, healthy foods. If confirmed by studies using a stronger study design and with more precise and valid outcome measures, multi-dimensional interventions that take into account individuals within their environments may prove to be effective preventive strategies to reduce obesity in adults.