A SOCIAL NETWORK ANALYSIS OF HEGEMONIC AND OTHER MASCUINITIES

This paper examines Connell’s social theory of gender in two secondary schools. Using statistical models for social networks, relations of power, violence, liking and disliking are investigated with regard to students’ male dominance attitudes. While one school demonstrates support for local-level hypotheses articulated for Connell’s theory, and thus for the conception of hegemonic masculinity as sitting atop a hierarchy of masculinities, another school does not. However, support for the more fundamental notion that gender is relational is found within both contexts. This research represents the first assessment of Connell’s theory in local contexts using a quantitative relational methodology. That hypothesised effects are found, even after controlling for many other explanatory factors, demonstrates impressive empirical support for Connell’s theory.

Keywords: hegemonic masculinity, masculinities, social network analysis, exponential random graph models

In this companion article to a theoretical exposition of Connell’s (1995) social theory of gender (Lusher & Robins, 2009), we present an empirical quantitative assessment of the theory. The innovativeness of Connell’s theory is its focus on gender as a relational construct rather than as a categorical conceptualization. This relational focus asserts gender as a system of hierarchical relations, directly addressing issues of power absent from much theorization of gender but nonetheless deemed important. Connell’s relational assertion is that the hierarchical relation between genders is reinforced by hierarchies within genders. The overall dominance of masculinity over femininity is reinforced by the dominance of some masculinities over other forms most resembling femininity which are shunned and pushed to the bottom of a hierarchy of masculinities.

Connell’s term hegemonic masculinity has become a widely used descriptor for a dominant form (or configuration) of masculinity, which is seen to help perpetuate the domination of masculinity over femininity. The terms complicit, subordinate and marginalized masculinities describe other configurations of masculinity, which sit in relation to hegemonic masculinity in a hierarchy of masculinities. Complicit masculinities...
refer to those configurations which support the dominance of the hegemonic masculinity configuration, thus referring to the majority of men. Subordinate masculinities represent those that undermine the goals of a dominative hegemonic masculinity, with gay and academically inclined men presented as examples due to their association with femininity. Finally, marginalized masculinities represent complex configurations and interactions that occur when masculinity and other factors such as socio-economic status and ethno-cultural background intersect with gender. The use of the mechanisms of an “ideology of supremacy” (Connell, 1995, p. 83) and violence support the domination of masculinity over femininity, as well as the hierarchy of masculinities (for more detailed reviews of Connell’s theory, see Connell & Messerschmidt, 2005; Demetriou, 2001).

While there is much support for Connell’s theory, it is not without its issues. It has been criticised for being structurally deterministic and disavowing of agency (Whitehead, 2002), as detached from people’s everyday lives (Jefferson, 2002; Speer, 2001; Wetherell & Edley, 1999), and has undergone clarification and rethinking (Connell & Messerschmidt, 2005). Lusher and Robins (2009) suggest that the considerable confusion surrounding the theory, particularly as it relates to what individuals do in their everyday lives, centres on two primary issues. First, there is a lack of detail of the interdependency between individual, structural and cultural factors with regards masculinities. Second, the specific local contexts in which masculinities are enacted need elicitation. Regarding the first issue, defining gender simply as relational ignores the theoretical necessity to include particular beliefs about gender held by individuals, beliefs that underpin the relational aspects of gender as hierarchical and thereby dominative. In essence, “structural relations of power must be accompanied by a belief system that sees one group as superior to another” (Lusher & Robins, p. 397). One group will only try to hold power over the other if it feels justified to do so. As a result, if Connell’s theory holds those who most strongly endorse a belief in the dominance of masculinity over femininity are more likely to sit atop a social hierarchy of individuals, one that reflects the hierarchy of masculinities; and those who least endorse a belief in male dominance are most likely to sit at the bottom of that social hierarchy. This argument reflects interdependence between an individual factor (belief) and a structural form (hierarchy). It leads to the first of a number of general propositions with regard to Connell’s theory1:

[1] In a system of hegemonic masculinity, male dominance beliefs tend to be more strongly endorsed by those occupying more powerful positions in the social hierarchy.

Further, culture has an important part to play with regard to Connell’s theory because culture lays out possibilities but also constraints for social action. There are many

1 All hypotheses are derived from Lusher and Robins (2009).
definitions and components of culture. However, the culture of a social system as expressed by norms and associated behaviours is explicable (in part) in terms of individual perceptions about the generally held attitudes of others in the system. Individuals derive beliefs about what is valued within the social system by their perceptions of attitudes generally held by others, especially when they need to negotiate norms and behaviours with others in public. Culture does not determine but may influence individual attitudes and be influenced by them. The inclusion of these culturally based factors leads to a second general proposition:

[2] The perception of the male dominance beliefs of others is important in sustaining a gender-based social hierarchy.

Propositions one and two refer to the interdependency between individual, structural and cultural factors that would need to be present if Connell’s theory is a valid description of gender relations. However, it is clear that hegemony is not just power, it is legitimate power. This suggests that hegemonic masculinity must not just sit atop a hierarchy of masculinities, but that it must also be valued positively. Connell notes violence as used in domination by masculinity over femininity and of some forms of masculinity over others, but further indicates that the presence of violence is a measure of the illegitimacy of power. The result is a complex entanglement of emotion and violence with power relations. Connell’s terms complicit and subordinate masculinity refer to their relation to hegemonic masculinity. Complicit implies a configuration of masculinity that is inherently supportive of hegemonic masculinity and therefore sees it as legitimate. In contrast, subordinate masculinity is less likely to be supportive of its own domination. Further, marginalized masculinities add additional complexity as they may contest the power of hegemonic masculinity. While the impact of marginalized masculinities is hard to predict, the relation of hegemonic with complicit and subordinate masculinities, the internal components of masculinity, are amenable to the following assertion:

[3] Legitimation and/or contestation can be examined through the patterns of positive and negative affect, and also through violence. Further, we expect both legitimation and contestation to occur simultaneously.

The second major theoretical issue for Connell’s social theory of gender is the difficulty in contextualizing masculinities in specific relational settings. To explore how individuals do gender in their personal lives, there is a need to explore masculinities in specific local contexts (Lusher & Robins, 2009). While Connell suggests that gender occurs at local, regional and global levels, it is important to consider the local more specifically. For instance, it is important not just to think of schools in general as an

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Lusher & Robins

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2 Of course some subordinate groups may be actively engaged in their own subordination and lack the critical capacity to comprehend and also alter power structures that suppress them.
amorphous abstract whole, but instead to think of instantiated local settings, such as the small private school near the park—a specific school with specific characteristics. This subtle distinction has considerable consequences because it distinguishes between general and specific local settings, permitting a move to a local level investigation that incorporates specific individuals, the relations between them, and the cultural rules that go with the particular context.  

[4] Connell’s theory can be investigated empirically by examining instantiated local contexts through specific hypotheses that express expected forms of interdependency between individual, structural, and cultural factors. This final proposition defines the contextual framework in which the previous three propositions can be examined. Our argument is that if these particular patterns of social beliefs and hierarchies are observed in particular local contexts, then we have evidence that those local social systems exhibit a culture that includes components related to hegemonic masculinity. More particularly, Lusher and Robins (2009) detailed hypotheses provide a demanding examination of contexts that support hegemonic masculinity (see Table 1 below). The empirical issue is whether we can find relevant local social systems that exhibit such patterns at all, or at least to some reasonable extent, and, if so, whether such patterns tend to be universal across contexts.

Schools are chosen for this study as suitable local contexts because there is considerable support for schools as a site of gender construction (Carrigan, Connell, & Lee, 1985; Davies, 1993; Frosh, Phoenix, & Pattman, 2001; Kenway & Fitzclarence, 1997; Kimmel & Mahler, 2003; Mac an Ghaill, 1994; Poynting & Donaldson, 2005). The specific benefits of using schools are: (1) while there is a teacher/student dynamic there is typically an absence of an externally explicit hierarchical structure within the student body of a given year level; (2) schools can be compared readily across SES and cultural boundaries as they share many similarities; (3) adolescence is considered a time when there is no direct impact of testosterone on dominance behaviour in males (Halpern, Udry, Campbell, & Suchindran, 1993; Mazur & Booth, 1998) and so male behaviours cannot be explained away by biological imperatives. Importantly, recent qualitative research in the Australian context has demonstrated support for Connell’s theory in single-sex schools (e.g., Poynting & Donaldson, 2005).

In this paper, we present empirical examples of two boys-only secondary schools: in one we show that there is reasonable evidence for a social system centred upon hegemonic masculinity, but that the evidence is less compelling in the second. Even so, the more general insight that hegemonic attitudes toward masculinity help structure social hierarchies is abundantly clear in both schools. We examine our propositions for Connell’s theory quantitatively using social network analysis, a relational methodology well-suited to an investigation of the hierarchical relations between individuals in local contexts.

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3 It is clear that researchers already investigate specific local settings.
settings. The article proceeds as follows. An analytic framework of statistical models for social networks is outlined, detailing how such models permit the testing of the theoretical assertions made for a local contextual version of Connell’s theory. Some major measurement issues are then addressed before the presentation of the analyses of Connell’s theory for specific local settings. Finally, the implications of these findings are discussed.

Social Network Analysis (SNA)

Connell’s theory focuses specifically on relations, and so to investigate it empirically we need a methodology capable of examining the relations between individuals, not just individual qualities. However, standard statistical methods are not adept at the measurement of social relations. In fact, standard statistical measures specifically disavow the possibility of relations between individuals through the assumption of independence of observations. In contrast, social network analysis (SNA) focuses on the “relationships among social entities, and on the patterns and implications of these relationships” (Wasserman & Faust, 1994, p. 3). Within a social network individuals are by definition interdependent—that is, individuals are “actors in social relations” (Abbott, 1997, p. 1152). Importantly, SNA takes the notion “social network” beyond the metaphor by specifically asking all individuals in a particular social context about a particular social relation with others within that context (e.g., “Who are your close and personal friends?”). In a social network, individuals (or actors) are represented as nodes (or dots) in a graph, and the relations between them are represented as edges or lines. Figures 1 and 2 are visualizations of social networks, where the black dots (or network nodes) represent students in the school, and lines between them nominations of who they like (more details of the sample are below). It is apparent that the patterns, or structure, of these networks differ markedly via looking at these diagrams. However, it is not entirely obvious just from looking at these complex network pictures what might explain the presence of the social ties between students. The patterns and structures of connections, and their relationship with the qualities of the individuals within the network, are of specific interest. SNA is therefore a set of methodological techniques used to address the ways in which social relations interact with individual factors in local social contexts.

To examine and understand complex social structure it is possible to apply a particular class of statistical model for social networks—exponential random graph models (ERGM; Pattison & Wasserman, 1999; Robins, Elliott, & Pattison, 2001; Robins, Pattison, & Elliott, 2001; Snijders, Pattison, Robins, & Handcock, 2006; Wasserman & Pattison, 1996). Essentially, ERGM work as a pattern recognition device, seeing if certain small network patterns (or configurations) occur at greater or less than chance levels. A configuration may be, for example, the tendency of mutual social ties (e.g., reciprocity—“You scratch my back, I’ll scratch yours.”). There are, however, other network configurations that incorporate individual qualities or attitudes—for instance, if people with certain characteristics receive more network ties. These configurations are
Figure 1. Liking network for Eaglewood College.

Figure 2. Liking network for Highton College.
called *actor-relation* effects (or actor attribute effects) and may help explain, for instance, the popularity of individuals in the network. Any individual measure of interest to the researcher can be an actor-relation effect (e.g., age, attitudes), and may be incorporated in this way. Therefore a number of configurations can be included in a model, in much the same way that a researcher might add variables into a regression analysis to understand the important effects in the data. Similar to regression, ERGM parameters are estimated for real-world social network data collected by a researcher. Finally, a major methodological assertion of the ERGM framework is the interdependency of actors in a social space (not independent observations), implemented through conditional dependence assumptions (Robins & Pattison, 2005). For example, using conditional dependence you could argue that you may have a very slim chance of meeting Barack Obama, though if your best friend is Michelle Obama your chances substantially increase. However, using the assumption of independence of standard statistics the argument is that knowing Michelle has no bearing on your chances of meeting Barack and that these events are completely independent. We argue that conditional dependence is more sensible for social contexts, which are by definition about relations between people. For a detailed introduction to ERGM, see Contractor, Wasserman, and Faust (2006); Robins, Pattison, Kalish, and Lusher (2007).

We know from experience that human social relations have purely structural regularity that does not depend upon the individual qualities (e.g., reciprocity in shaking hands occurs regardless of personal qualities—it is just a social norm that tends to be followed). In the present study we have controlled for the influence of these network structural regularities, but we do not go into their detail here. Instead, the specific hypotheses made for Connell’s theory involve the interaction of social relations and individual-level attributes (i.e., the actor-relation effects) and these are the focus of our research.

For the current study we consider three types of actor-relation effects. First, a *sender* effect indicates whether individuals with certain characteristics are more likely to send social ties. Second, a *receiver* effect refers to the propensity of individuals with a certain attribute to receive social ties. A third effect simultaneously examines the attributes of the sender and receiver of a tie, referred to as a *homophily* effect. Homophily indicates the degree to which individuals with similar attributes associate with one another, reflecting the notion that “birds of a feather flock together.”

Importantly, we use actor-relation effects to explore the local-level theoretical assertions made for power, affect, and violence relations. Table 1 presents propositions by Lusher and Robins (2009) that exemplify the patterns of interdependencies expected in a system of hegemonic masculinity, aligned with the appropriate *sender*, *receiver* or *homophily* effect. Therefore, each proposition is represented by a specific configuration.

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4 In short, we control the general sorts of structural parameters analysed in similar networks (see Lubbers & Snijders, 2007). Doing so makes the predictions for Connell’s theory very stringent as support for the research hypotheses must be substantial enough to be statistically significant even given competing explanatory variables.
Table 1
Predicted Hypotheses with Specific ERGM Effects for Networks of Power, Violence, Liking and Disliking (from Lusher & Robins, 2009)

<table>
<thead>
<tr>
<th>Hypothesis #</th>
<th>ERGM social network</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power</strong></td>
<td>actor-relation effects</td>
</tr>
<tr>
<td>1</td>
<td>Individuals with low male dominance beliefs will have a greater tendency to send power ties. Negative sender, Personal MAI</td>
</tr>
<tr>
<td>2</td>
<td>Individuals with high perceived male dominance beliefs will have a greater tendency to send power ties. Positive sender, Perceived MAI</td>
</tr>
<tr>
<td>3</td>
<td>Individuals with high male dominance beliefs will have a greater tendency to receive power ties. Positive receiver, Personal MAI</td>
</tr>
<tr>
<td>4</td>
<td>Individuals with low perceived male dominance beliefs will have a greater tendency to receive power ties. Negative receiver, Perceived MAI</td>
</tr>
<tr>
<td><strong>Violence</strong></td>
<td></td>
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<tr>
<td>5</td>
<td>Individuals with high male dominance beliefs will have a greater tendency to send ties (be violent towards others). Positive sender, Personal MAI</td>
</tr>
<tr>
<td>6</td>
<td>Individuals with low perceived male dominance beliefs will have a greater tendency to send ties (be violent towards others). Negative sender, Perceived MAI</td>
</tr>
<tr>
<td>7</td>
<td>Individuals with low male dominance beliefs will have a greater tendency to receive ties (be victims of violence). Negative receiver, Personal MAI</td>
</tr>
<tr>
<td>8</td>
<td>Individuals with high perceived male dominance beliefs will have a greater tendency to receive ties (be victims of violence). Positive receiver, Perceived MAI</td>
</tr>
<tr>
<td><strong>Liking</strong></td>
<td></td>
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<tr>
<td>9</td>
<td>Individuals with low male dominance beliefs will have a greater tendency to send liking ties. Negative sender, Personal MAI</td>
</tr>
<tr>
<td>10</td>
<td>Individuals with high perceived male dominance beliefs will have a greater tendency to send liking ties. Positive sender, Perceived MAI</td>
</tr>
<tr>
<td>11</td>
<td>Individuals with high male dominance beliefs will have a greater tendency to receive liking ties. Positive receiver, Personal MAI</td>
</tr>
<tr>
<td>12</td>
<td>Individuals with low perceived male dominance beliefs will have a greater tendency to receive liking ties. Negative receiver, Perceived MAI</td>
</tr>
<tr>
<td><strong>Disliking</strong></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Individuals with considerably different male dominance beliefs are more likely to express negative affect ties to and receive such ties from one another. Positive heterophily, Personal MAI</td>
</tr>
<tr>
<td>14</td>
<td>Individuals with considerably different perceived male dominance beliefs are more likely to send negative affect ties to and receive such ties from one another. Positive heterophily, Perceived MAI</td>
</tr>
</tbody>
</table>

* That is, the person who dislikes another, and the person who is disliked, will share very different masculinity attitudes.
(or effect) in our model, an effect that we expect to occur at beyond chance levels—that is, to be statistically significant, even when controlling for other effects.

Method

Participants

Two secondary schools in metropolitan Melbourne, Australia, were involved in the research. Both schools were boys-only religious schools. The participation rates were 39.9% (n = 72) for Eaglewood College and 77.4% (n = 106) for Highton College. Ethics approval was obtained from the research institute’s ethics committee and from the relevant government and non-government education offices. Representatives of both schools provided written consent for their school to participate. Written information in the form of a plain language statement and a consent form were given to each student and their parents/guardians to read, sign, and return to the researcher to actively consent to participation in the research. While, on the one hand, the participation rate of Eaglewood was lower than expected, we might also say that Highton’s rate was higher than expected. Participation rates may to some degree reflect the contextual differences between the schools, with Highton certainly more academically oriented, higher in student discipline and therefore having students more likely to adhere to teacher requests to return forms, etc. The environment at Eaglewood was by contrast less strict, less academically oriented and overall less regimented than Highton. More generally, the schools were of equivalent size, though Highton was an upper-middle class school from a wealthier area while Eaglewood was a middle-class school in a middle-class suburb.

Materials

All participating students received and self-completed a survey that included male dominance beliefs, social network questions, and demographic questions.

Male dominance beliefs. Connell (1995) indicates that a belief in the superiority of masculinity over femininity crucially underpins hierarchical gender relations. We term such a belief male dominance, and have elsewhere constructed an inventory for its measurement specifically for use with adolescent school students. This inventory is the Masculine Attitudes Index for Students (MAI-13s: Lusher, 2008) and was developed for an Australian context using a combined exploratory/confirmatory structural equation modelling (SEM) approach. The estimates of the SEM demonstrate the presence of a second-level factor (male dominance) and composed of four interrelated fac-

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5 Participation rates were based on the total numbers of year 10 students in each school. Although the participation rate for Eaglewood was lower than desired, the number of participants was still judged sufficient to investigate the actor-relation propositions. See footnote 8 below.

6 Names of the schools have been changed to ensure anonymity.
tors: anti-femininity, gay-male homophobia, violence, and anti-academic attitudes. An individual’s endorsement of the items is referred to as Personal MAI. Additionally, a second response to the same items elicited how an individual perceived that their close friends would respond, and is referred to as Perceived MAI. Perceived MAI is our measure of culture used in this research. DiMaggio (1997) argued that along with its external manifestations, culture also operated within individual cognitions as each person has an understanding of what constitutes culture, and this has a strong cognitive component that may affect lives through the sorts of relations established with others.

Higher scores on Personal MAI and Perceived MAI (terms which will be used from now on) indicate a greater endorsement of a dominitive masculinity (i.e., a greater endorsement of masculinity as anti-feminine, homophobic, violent, and playboy), while lower scores indicate more egalitarian gender attitudes. So a student with high Personal MAI scores endorses dominitive masculinity while a student with high Perceived MAI scores judges that other students tend to endorse dominitive masculinity.

Social relations of power, violence, liking and disliking. Power relations (hereafter, the power network) are examined by constructing a single binary network from four name generating questions. Conceptually, the power network is a relational measure of hierarchy between the students. These power network questions asked students to nominate who they thought was most powerful, who was most popular, those who had a direct effect on them within their student year level, either in a positive or negative way, as well as who called the shots within their relationships. The four separate name generator questions produced four binary matrices that were added together into a single matrix that was binarized, with any non-zero value (i.e., possible values 1 to 4 in this additive matrix) was classified as a “1” and all “0” values retained as zero. We note that the choice of binary social relations is dictated by the ERGM methodological framework, which can only presently deal with dichotomous data. Binary networks necessarily reduce the complexity of relationships to either present or absent (as opposed to valued networks where an individual can have some form of valued score of their relationship). However, each relationship is still elicited from two people and is informative about the agreement (in the case of reciprocal ties, or no ties at all) or the asymmetry (where one person nominates another, but this is not reciprocated) of a relationship.

Relations of bullying within the school (hereafter the violence network) were seen as an appropriate measure of violence for schools. A single, binary matrix of bullying behaviours was constructed from name generator questions asking students to nominate others who bullied them physically, verbally, and/or socially. The network was constructed in the same manner as the power network such that a nomination in any of the constituent networks was considered a “1” in the final binary matrix, a “0” indicated that there were no bullying ties in any of the networks for the given pair of actors. For ease of interpretation, violence relations were transposed so that people sending violence ties are bullies and those receiving violence ties are victims.

For positive affect relations (hereafter the liking network) often friendship is included as a social network measure and it is unproblematically accepted that partici-
pants are aware of its meaning (e.g., Espelage, Holt, & Henkel, 2003; Salmivalli, Huttunen, & Lagerspetz, 1997). However, to include others whom students like but with whom they are not friends, we added the name generator questions, “Who do you look up to or admire?” and “Which people would you like to be seen with?”. As with the previous networks, the various name generator questions were compiled into a single binary network.

Negative affect relations (hereafter the disliking network) are not often used in social network research. To assess disliking ties in this research the questions, “Who do you not get along with?” and “Which student(s) would you choose not to have lunch with?” were used, again as a combined, single binary network.

**Marginalized masculinities.** Ethno-cultural background (ECB) and socio-economic status (SES) are included to account for marginalized masculinities. Students were classified into dominant or non-dominant (marginal) ECB. Dominant ECB students were defined as those who self-identified as Australian, Anglo-Australian, British, or Irish heritage; only spoke English at home; and were either Christian or non-religious. Students who spoke another language at home or who identified as other than Australian, Anglo-Australian, British, or Irish heritage (e.g., Greek Australian), or who chose another religion that was neither Christian nor non-religious were considered to be of non-dominant ECB.

A measure of SES was the Socio-Economic Index for Areas (SEIFA, 2001) Index of Relative Socio-Economic Advantage/Disadvantage (Australian Bureau of Statistics, 2001a). These scores are derived from census data and relate to areas in Australia by postcode. Higher scores on the SEIFA 2001 (Mean = 1000, SD = 100) indicate that “an area has attributes such as a relatively high proportion of people with high incomes or a skilled workforce” (Australian Bureau of Statistics, 2001b, p. 9). Another further measure of SES is the ANU4 Occupational Status Scale (Jones & McMillan, 2001) was used also as a measure of SES through the assessment of occupational status of the students’ parents. The scale ranges from 0 (the lowest) to 100 (the highest) occupational rating, and is meant to reflect the “underlying stratification order of modern societies” and scoring “occupations to reflect their central role in converting educational credentials into market income” (Jones & McMillan, p. 539).

**Model Parameter Specification and Analysis**

Our model specification for each of the four networks was as follows. For all individual-level variables we include actor-relation effects of sender, receiver as well as homophily effects. Therefore, separate effects for senders of ties and receivers of ties were each included for Personal MAI, Perceived MAI, SES (all continuous variables), and ECB (binary variables). As the tendency to nominate others of similar characteristics is also prominent in social networks, we must control for this as well. Personal MAI, Perceived MAI and SES homophily effects were included in the model using the continuous difference parameter (in which a negative score indicates a lack of differ-
—i.e., homophily). Ethno-cultural background utilised the binary similarity parameter (where a positive score means choosing similar others—i.e., homophily). We used parameters to control for purely structural effects of our network (though for clarity of results we do not report them here).

Results

We begin with some standard statistical analyses of the two schools. Table 2 presents some descriptive statistics of the two schools. Results of $t$-tests indicated that students at Highton College have significantly lower Personal MAI, $t(176) = 5.665, p < .001$, and lower Perceived MAI, $t(176) = 4.455, p < .001$, than Eaglewood College students. In contrast, students at Eaglewood College reside in areas that are significantly lower in SES, $t(136.72) = -14.621, p < .001$, have fathers with significantly lower occupational status, $t(176) = -4.259, p < .001$, and also have mothers with significantly lower occupational status, $t(163.83) = -2.557, p < .05$, than Highton College students. Analysis of ethno-cultural background by school revealed a significant association (Pearson $\chi^2 = 8.023, df = 1, p < .01$) indicating the presence of a greater number of marginal ECB students at Eaglewood College. To explore the association between these variables, a regression analysis was conducted including school, ECB and SES as predictors of Personal MAI. Neither SES (SEIFA 2001, $\beta = .055, t = .505, p = .614$; Father’s occupational status $\beta = -.051, t = -.669, p = .505$; Mother’s occupational status $\beta = -.080, t = -1.093, p = .276$) nor ECB ($\beta = -.092, t = -1.221, p = .224$) was predictive of Personal MAI scores. However, the school environment itself ($\beta = -.373, t = -3.471, p = .001$), rather than demographic features, was associated with differences in Personal MAI, providing evidence that local context is important.

We now examine these same variables in conjunction with the social relations of power, violence, liking and disliking using ERGM for each school separately. Significant parameter estimates are presented in bold, with standard errors in parentheses. An ERGM parameter is substantial (significant) when the estimate is more than double the standard error. If a parameter estimate (representing a particular network configuration) is substantial and positive, this is evidence that the configuration is more prevalent in the network than would be the case by chance (given the other effects in the model). In other words, a substantial positive parameter estimate is evidence for an underlying social process. All models have achieved convergence, indicating stable parameter estimates.7

7 Analyses conducted with the PNet program (Wang, Robins, & Pattison, 2005).

8 In these statistical models $n$ is not the number of participants but rather the number of possible ties in the network. Therefore, for Eaglewood, the sample size is not $n$ but $n(n-1)$. Our Eaglewood College sample of 72 students ($72 \times (72 - 1) = 5,112$) has more than adequate statistical power to examine these parameters.
Selected ERGM parameter estimates of interest for Eaglewood College are presented in Table 3. Each specific local-level hypothesis made for Connell’s theory from Table 1 is put next to the appropriate parameter in the results as a square-bracketed number (e.g., [1] refers to Hypothesis 1 on Personal MAI and sending power ties).

For power relations, H1 from Table 1 is examined by the estimate for Sender Personal MAI. The presence of a negative but non-significant estimate indicates a lack of support for this specific hypothesis. H2, which explores the notion that senders of power ties would hold high Perceived MAI, was also not supported. However, H3, which argued that individuals with high Personal MAI would receive more power ties, was supported. Finally, H4 was not supported, though the presence of a negative though non-significant effect does show some trend towards this effect. In all, there was at best modest support for Connell’s theory for power relations. Interestingly, for Personal MAI there is a significant and negative difference effect for power relations, and for liking relations, indicating that boys choose as powerful and also like others similar in Personal MAI to themselves. These effects were not specifically predicted but are nonetheless effects in the model from which we can draw inferences.

For violence relations, only H5 was supported by a significant effect, indicating that individuals with high Personal MAI are more likely to be violent towards others (i.e., send violence ties).

Interestingly, for the liking relations all four hypotheses (H9-H12) were supported for Eaglewood College. Further, there was also a homophily effect for Personal MAI, such that above and beyond the other effects for Personal MAI (i.e., H9 and H10) individuals like others of similar Personal MAI levels to themselves.

Finally, for disliking relations, H13 was supported by a positive and significant difference effect for Personal MAI, which states that individuals will dislike others with very different Personal MAI. However, H14 was not supported, and in fact the opposite was found – boys who dislike one another had very similar Perceived MAI. Individuals with very similar Perceived MAI were likely to have negative ties between
them, as evidenced by a negative and significant difference effect for Perceived MAI. In additional to these facts, individuals who had high Personal MAI, and individuals who had low Perceived MAI, were significantly more likely to be disliked.

For marginalized masculinities there are a number of significant effects. Due to space limitations, we highlight only a couple specifically relating to power and liking relations. Students with low occupational status fathers receive more power ties, though students from higher SES suburbs are liked more. Regarding ECB it is important to

### Table 3
**ERGM Estimates for Eaglewood College Social Relations and Connection to Personal and Perceived MAI scores**

<table>
<thead>
<tr>
<th></th>
<th>Power</th>
<th>Violence</th>
<th>Liking</th>
<th>Disliking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male dominance beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sender Personal MAI</td>
<td>-0.13 (0.09)</td>
<td>0.73 (0.36)*</td>
<td>-0.29 (0.12)*</td>
<td>0.10 (0.13)</td>
</tr>
<tr>
<td>Sender Perceived MAI</td>
<td>0.04 (0.08)</td>
<td>-0.55 (0.34)</td>
<td>0.39 (0.13)*</td>
<td>-0.06 (0.13)</td>
</tr>
<tr>
<td>Receiver Personal MAI</td>
<td>0.28 (0.13)*</td>
<td>-0.09 (0.20)</td>
<td>0.36 (0.15)*</td>
<td>0.25 (0.10)*</td>
</tr>
<tr>
<td>Receiver Perceived MAI</td>
<td>-0.21 (0.13)</td>
<td>0.04 (0.19)</td>
<td>-0.41 (0.15)*</td>
<td>-0.17 (0.11)</td>
</tr>
<tr>
<td>Difference Personal MAI</td>
<td>-0.24 (0.10)*</td>
<td>0.12 (0.25)</td>
<td>-0.24 (0.08)*</td>
<td>[13] 0.50 (0.13)*</td>
</tr>
<tr>
<td>Difference Perceived MAI</td>
<td>0.08 (0.10)</td>
<td>-0.17 (0.24)</td>
<td>0.17 (0.09)</td>
<td>[14] -0.35 (0.13)*</td>
</tr>
<tr>
<td><strong>Ethno-cultural background</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sender Dominant ECB</td>
<td>-0.20 (0.13)</td>
<td>-0.02 (0.42)</td>
<td>-0.07 (0.16)</td>
<td>0.15 (0.17)</td>
</tr>
<tr>
<td>Receiver Dominant ECB</td>
<td>-0.43 (0.16)*</td>
<td>0.30 (0.26)</td>
<td>-0.31 (0.18)</td>
<td>-0.05 (0.19)</td>
</tr>
<tr>
<td>Similarity Dominant ECB</td>
<td>-0.70 (0.20)*</td>
<td>-0.54 (0.63)</td>
<td>0.43 (0.12)*</td>
<td>-0.10 (0.36)</td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sender SEIFA 2001</td>
<td>-1.59 (1.13)</td>
<td>-0.65 (2.72)</td>
<td>-3.98 (1.75)*</td>
<td>-3.12 (1.52)*</td>
</tr>
<tr>
<td>Receiver SEIFA 2001</td>
<td>0.93 (1.26)</td>
<td>-0.81 (2.07)</td>
<td>4.64 (1.79)*</td>
<td>-0.33 (1.12)</td>
</tr>
<tr>
<td>Difference SEIFA 2001</td>
<td>-1.60 (1.57)</td>
<td>0.20 (3.37)</td>
<td>-2.14 (1.20)</td>
<td>-1.06 (2.13)</td>
</tr>
<tr>
<td>Sender Dad Occupation</td>
<td>-0.24 (0.23)</td>
<td>-0.66 (0.54)</td>
<td>0.05 (0.33)</td>
<td>0.67 (0.34)</td>
</tr>
<tr>
<td>Receiver Dad Occupation</td>
<td>-0.52 (0.24)*</td>
<td>-0.09 (0.49)</td>
<td>-0.24 (0.36)</td>
<td>-0.30 (0.26)</td>
</tr>
<tr>
<td>Difference Dad Occupation</td>
<td>-0.36 (0.28)</td>
<td>0.59 (0.62)</td>
<td>-0.25 (0.22)</td>
<td>0.41 (0.35)</td>
</tr>
<tr>
<td>Sender Mum Occupation</td>
<td>-0.22 (0.20)</td>
<td>0.35 (0.42)</td>
<td>0.25 (0.27)</td>
<td>-0.12 (0.27)</td>
</tr>
<tr>
<td>Receiver Mum Occupation</td>
<td>-0.20 (0.20)</td>
<td>0.23 (0.40)</td>
<td>-0.00 (0.27)</td>
<td>0.26 (0.18)</td>
</tr>
<tr>
<td>Difference Mum Occupation</td>
<td>0.27 (0.24)</td>
<td>-0.08 (0.49)</td>
<td>0.12 (0.19)</td>
<td>0.10 (0.29)</td>
</tr>
</tbody>
</table>
note that the marginal ethno-cultural group was in fact the majority in this school. The significant, negative receiver effect for ECB indicates that marginal ECB students were more likely to be considered powerful, whereas no such effect was found for liking. Indeed, a negative homophily effect for power shows that dominant ECB boys do not consider other dominant ECB boys as powerful, though a positive homophily effect for ECB for liking relations demonstrates that boys of dominant ECB like others of the dominant ECB. In summary, given the other effects in the model, low SES boys and marginal ECB boys are seen as powerful. However, boys from wealthier suburbs are liked more, and liking is stronger for similarity in ECB by dominant ECB students.

**Context 2: Highton College**

The ERGM model estimates for Highton College are presented in Table 4, and the liking network in Figure 2.

In contrast to Eaglewood College, the results for Highton College generally indicate no support for any of the hypotheses made for a local version of Connell’s theory, apart from one hypothesis. For violence relations H8 was supported, which predicted that boys who are victims of violence will have high Perceived MAI. However, the lack of support for hypothesized effects does not mean that attitudes towards masculinity were completely unimportant at Highton, for masculine attitudes intersected with social ties in non-predicted ways. A homophily effect for Personal MAI in the power network and also in the liking network indicates that boys see as powerful and like others with similar masculinity attitudes.

The important effects for marginalized masculinities at Highton are the following. Dominant ECB students like similar ECB students. Interestingly, a significant and positive effect for father’s occupational status indicates that boys with high status fathers are more liked. For violence, boys from marginal ECB are both more likely to perpetrate and receive violence, and boys from lower status areas are also more likely to perpetrate and receive violence. Further, boys from low SES suburbs are more likely to be violent, and violence occurs between students of similar SES backgrounds. In this school, there appears to be violent contestation amongst marginal ECB boys, and liking between boys of dominant ECB, and an overall liking towards boys whose fathers are in high status jobs.

**Discussion**

Hegemonic and other masculinities as espoused in Connell’s social theory of gender are examined in two secondary schools using statistical models for social networks. Importantly, Connell has suggested that local contexts are likely to differ from one another in the degree to which they support gendered relations of power. Results for the two schools vary considerably from one another in the ways in which they provide local level support for Connell’s theory. Significantly though, one school (Eaglewood) did show support for hypotheses based on Connell’s theory for specific local settings.
However, for both schools there were non-hypothesized homophily effects for personal masculinity attitudes, such that boys consider as powerful and also like other students who have similar masculinity attitudes to themselves. It is clear then that attitudes to masculinity can be an important organizing principle in the emergence of social relations (and in one school, hierarchy) among schoolboys.

Evidently, the power network hypotheses were not well supported by either school, with no support at Highton, and only H3 supported at Eaglewood, though this partic-
ular hypothesis is perhaps the most important one (i.e., powerful people personally endorse dominative masculinity attitudes). When examining the liking network, and thus legitimate power, support was found in Eaglewood for all predictions made. It may be that the liking network is a better test of power relations because it measures hierarchy with emotional investment (whereas the power network was deliberately devoid of emotion). The claim that liking relations (and friendship-type relations more generally) are hierarchical has considerable supporting evidence in SNA studies in that transitive and not cyclic triangulation is generally the way these relations are organised (see, for example, the meta-analysis of 102 student networks by Lubbers and Snijders, 2007). There is strong evidence more generally that everyday human social relations are inherently hierarchical and power-laden (Kozorovitskiy & Gould, 2004; Mazur & Booth, 1998; Sidanius & Pratto, 1999; Smith & Brain, 2000; Turner, 2005). The presence in our models of receiver effects asserts hierarchy based on certain attributes, demonstrating hierarchy in the liking network.

Disliking relations are a further indicator of legitimacy. Specifically, we hypothesized that disliking between hegemonic and subordinate masculinities differentiates the two configurations of masculinity from one another, highlighting the power of hegemonic over the subordinate, but also indicating the subordinate group’s contestation with the hegemonic group. Indeed, hegemony is the constant struggle for power that never becomes a totality (Whitehead, 2002) so the presence of contestation is likely to be present in any social context. At Eaglewood, the predicted effect of boys to dislike others with quite different Personal MAI attitudes was supported. However, the prediction that those students who dislike others would have large differences in Perceived MAI was not observed and, in contrast, students were more likely to be similar in their perceptions of the masculine attitudes of others. This indicates that boys at Eaglewood dislike other students with very similar views about masculinity norms and suggests a shared cultural norm between students that may develop out of competition (i.e., arising from dislike) and not from diffusion of attitudes among friendship. Another interesting detail is that students who are viewed negatively personally endorse more dominative masculine attitudes (i.e., have higher Personal MAI). The combination of these effects suggests that masculine attitudes are important regarding who students do not like.

As noted by Connell (1995), “violence is a part of a system of domination, but it is also a measure of its imperfection. A thoroughly legitimate hierarchy would have less need to intimidate” (p. 84). At Eaglewood, those students who bully others personally hold more dominative masculine attitudes. However, the students who were victims of violence did not hold more egalitarian, or less dominative, masculine attitudes. Does this indicate the failure of ideological power to enforce hierarchy? Is this indicative of contestation from a number of different sources, not just subordinated masculinities? The presence of support for liking relations and partial support for disliking relations indicates that there is both an emotional buy-in for a dominative masculinity but also some level of disaffection with it. These simultaneous effects highlight the co-occurrence of leadership and domination in boys’ social relations. The presence
of violence may indicate illegitimacy of power, a reinforcement of legitimate power, or indeed contestation. It is hard to know the exact role that violence may play in supporting ideological power, and this is an area of Connell’s theory that requires further theorizing, as well as more detailed empirical investigation.

However, there were homophily effects for power and for liking relations, so boys make liking nominations based on the similarity of masculine attitudes, though this does not indicate hierarchy. Yet it is possible that association with similar others produces groupings, and this grouping on attitudes is a precursor to hierarchical structuring of attitudes where students like others of similar levels to themselves, plus those with more extreme attitudes. This latter pattern appears to be the case at Eaglewood. Of course this is an empirical question to be examined longitudinally.

**Marginalized Masculinities**

Regarding marginalized masculinities for which no specific hypotheses were made, we note the following. The effects for Highton are consistent with a notion of masculinity that is characterized by achievement/success for middle-class masculinities (Frosh et al., 2001), highlighted by social prestige surrounding father occupational status. Attitudes toward masculinity do not shape hierarchy at Highton, though students do group on such attitudes. It appears that contestation of relations at this upper-middle class school, as noted by violence, occurs amongst those who are marginalized, either via their ethno-cultural background or lower SES. Together, the results suggest an established hierarchy supporting a white, middle-class masculinity, where students at the top feel comfortable with their own masculinity and are more or less unchallenged. In contrast, at Eaglewood there appears to be contestation between marginalized and dominant masculinities, with much more volatility surrounding those at the top of the hierarchy of masculinities. Marginal ECB students and students with fathers of low occupational status are considered powerful, yet there is an effect for dominant ECB boys to like similar others, and for boys from wealthier areas to be liked. As such, power may be seen to reside with marginalized boys (though in terms of numbers within the school, they were the “dominant” group).

We note that the two school contexts were quite different, in the number of marginalized boys in each, and the overall SES. However, clearly there are also expectations of the teachers and the parents, students in other year levels and a number of other factors which may have an impact on the expression of masculinity in these schools. We also note that our quantitative approach does not specifically take into account these impacts in a direct fashion, unless they are somehow quantified and inserted into the model as a variable. Clearly this can be a limitation, but it is also important to note that the methods we use are stochastic, “and stochastic models allow us to capture both the regularities in the processes giving rise to network ties while at the same time recognizing that there is variability that we are unlikely to be able to model in detail” (Robins et al, 2007, p. 174). How broader social contextual factors can be incorporated into this analytic framework though requires further work. However, what the methodological
framework does assert is the agency of the boys and their own construction of masculinity in relation to other boys around them. This locates the analysis in a bottom-up construction of masculinity rather than a top-down adherence. Clearly there are top-down factors at play, but the current bottom-up approach does demonstrate that quantitative approaches need not necessarily focus only on the broader societal influences on gender.

A Positive Hierarchy of Masculinities?

This research has been based on the assumption that “at the local level, hegemonic patterns of masculinity are embedded in specific social environments” (Connell & Messerschmidt, 2005, p. 839) and the suggestion that “a positive hegemony remains, nevertheless, a key strategy for contemporary efforts at reform” (Connell & Messerschmidt, p. 853). Is Highton College, with its absence of support for a local version of Connell’s theory, a positive hegemony? Certainly there was some hierarchy which did suggest the presence of middle class masculinities in line with Connell’s theory of gender. Dominance and leadership are said to be central to an understanding and reframing of a positive hegemony (Howson, 2006). However, we have already argued that Connell’s theory combines both leadership (through legitimate rule) and domination (through violence) such that the relation of hegemonic to complicit masculinity can be seen as leadership and the relation of hegemonic to subordinate masculinity can be seen as domination (Lusher & Robins, 2009). Disliking and violence may therefore be seen as connected with domination. In contrast, leadership is seen to revolve around liking and ideological power (i.e., power relations related to beliefs). Rather than dichotomise these contrasting hierarchical styles of dominance and leadership, it is perhaps more appropriate that they occur simultaneously, though to different degrees depending on the context. In this sense, we do not find it useful to assert that leadership will only align with a positive hegemony and dominance will only align with a dominative hegemonic masculinity. However, the ratio between dominance and leadership is likely to be very important and informative. We have noted above the hierarchical nature of human social relations. We therefore suggest that a positive hegemony should not be devoid of hierarchy but instead constituted by power relations in which those with the most egalitarian attitudes towards women are seen as the most powerful or influential. Further, aligning with such relations would be relations of liking, indicating an emotional investment in such power relations. We would also expect some degree of negative affect between those with opposing masculine attitudes, though a lack or reduction of violence relations associated with masculine attitudes. As Howson (2006) notes, there is potential for a positive hegemony—for those at the top of a hierarchy to dictate acceptable behaviours, norms, or the culture of the local setting.

Strengths, Limitations and Future Research

The importance of the present research is its quantitative investigation of Connell’s social theory of gender in specific local settings. We note that without the use of social network analysis, and particularly exponential random graph models, this would
This study is not without its issues, but as far as we are aware it is the first quantitative assessment of Connell’s theory in local settings that uses a quantitative relational methodology which is highly applicable to a relational theory. One of the major advantages of ERGM is the capacity to incorporate interdependency between social structures, individual attributes and cultural factors, thereby taking into account the context of the local setting, and not assuming individuals are independent and unrelated social actors. Notably, the hypotheses made of Connell’s theory were demanding, and their empirical exploration required the presence of effects at greater than chance levels, even while accounting for a number of control variables. The presence of statistical support for these hypotheses for liking relations (and to a lesser degree power, violence and disliking relations) in one of two local settings is striking empirical support for Connell’s theory. In conclusion, there is strong evidence that attitudes towards masculinity can be an important organizing principle in the emergence of hierarchy, not universally, but in some contexts. Ultimately, the insight from Connell that gender is relational is an informative one.

The limitations of the research are that rather than explore each social network independently, multi-network methods could unpack the legitimacy of relations of masculinities more fully (e.g., how do violence and power relations align?). How relations of affect, power and violence go together would be extremely informative. Additionally, the issue of legitimacy addresses the stability of power relations, and this therefore suggests that longitudinal data analysis would also prove useful to see how hierarchies emerge and how much they change over time.

Finally, qualitative research has long demonstrated strong support for the tenets of Connell’s theory. For instance, Poynting and Donaldson (2005) have clearly demonstrated the systematic nature of bullying in Australian ruling-class schools for the creation of ruling-class men. The current research, though with middle class students, adds to an understanding of masculinity in Australian schools by demonstrating the underlying bases for differing hierarchical structures in the two schools—in one school, based more upon masculinity attitudes, and in another school, more on SES. Future quantitative research could certainly explore more local contexts, including more schools, but also organizations, including work, leisure and community groups, including multi-level studies. The inclusion of females and the ways in which femininities intersect would certainly be informative. Investigations that differentiate aspects of masculinity attitudes, such as anti-femininity from homophobia and violence, and their relative impact in various social contexts would also be important. Importantly, this quantitative research maintains the relational aspects of gender so important to Connell’s theory. It is not just concerned with finding differences between groups, but instead can explore and understand the social relations and attitudes of people within a particular social context and explore the local-level patterns of social life and their generative social mechanisms. The possibility of combining quantitative social network analysis approach with a detailed qualitative analysis would indubitably be beneficial. For instance, while a quantitative approach can be necessarily broad, it is not able to explore the complexity of motivation, individual experiences and history of people’s lives gen-
dered lives. In contrast, one issue with qualitative research concerns knowing whether those interviewed are representative of the broader social context, and locating people more precisely within a social network could provide validation of the prominence or isolation of individuals in a local context. Finally, employing multi-methods that cross-validate is likely to produce a richer understanding of masculinities and open up considerable opportunities for masculinity research.

References


