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Developing complexity-consistent theory in a realist investigation

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Abstract

This is the second of a two part article examining the use of complexity-consistent theory in a realist investigation. The first article (*Evaluation* 18[4]) introduced the idea of complexity-consistent theory. It argued that complexity-consistent theories are likely to be useful for understanding complex processes of change and therefore useful in many kinds of evaluation. Further, it argued that theories can be organized within a hierarchy to reflect the different levels of reality involved in a change program. This was described as ‘layering’ theories. This second article describes the use of these concepts in a realist investigation. The purpose of the investigation was to develop a realist, middle-range theory to explain how and why some early intervention programs which ‘work’ on average for disadvantaged families do not work for the most disadvantaged. The investigation combined a small-scale realist evaluation of a family support program in Adelaide, South Australia with a modified form of realist synthesis. The work was undertaken as part of a PhD, supervised by Professor Nick Tilley, co-author of *Realistic Evaluation*.

Keywords

complexity-consistent theory, early intervention, layered theory, realist evaluation

Introduction

This is the second of a series of two articles that examine the use of complexity-consistent theory in a realist investigation. The first article (*Evaluation* 18[4]) explored the idea of complexity-consistent theory. It argued that complexity-consistent theories are more likely to be useful for understanding complex processes of change – those that are not linear or singular but emergent, interactive and to some extent unpredictable – and therefore useful in many kinds of evaluation. Further, it argued that different theories can be organized within a hierarchy or ladder to reflect the different levels of reality involved in a change program. This was described as ‘layering’ theories.

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This second article describes the use of these concepts in a realist investigation. The investigation sought to develop a theory to explain why some ‘early years, early intervention programs’ which ‘work’ on average for disadvantaged families do not work for the most disadvantaged – and why some, in fact, have been found to generate negative outcomes for children in the most disadvantaged families.

It was beyond the scope of the study to test the theory that was developed – that would require research on a significant scale. Rather, the intent was methodological. The research investigated whether it was possible to use data from a small-scale empirical study along with material from a realist synthesis of existing literature to develop a ‘theory of negative impacts’, and whether the empirical and literature components would each contribute to the theory. As a secondary goal, if such a theory could be developed, it could provide a basis for future empirical research.

This article begins with a brief recap of some of the ideas from the first article. It then explains the research problem and the research setting. Theory development in realist approaches is an iterative process, and the article describes the processes used for two stages of theory development. The first was to develop a first, tentative ‘theory of negative impacts’. This is consistent with a realist approach: being ‘theory-based’, the first stage is to develop a rough theory to shape subsequent work. The second phase refined it using a combination of realist evaluation and a modified form of realist synthesis.

Complexity-consistent theory

A realist philosophy of science underpins realist evaluation (Pawson, 2013; Pawson and Tilley, 1997) and realist synthesis (Pawson, 2006). Both complexity theory and a realist philosophy of science understand reality as comprising multiple, nested, open systems in which change is generative, context dependent and time irreversible. However, the ‘fit’ between complexity and a realist approach for evaluation purposes has been contested. In the earlier article of this pair, it was argued that because of the similarities and differences between the two, evaluators can usefully draw on both perspectives. Two strategies to do so were offered. The first was to draw on key concepts from each tradition in selecting and using theory within evaluation design and within the interpretation of findings. The second was to ‘layer’ theories to reflect the levels of reality with which the evaluation must deal.

The article argued that formal theories (that is, theories in particular disciplines) that reflect key tenets of complexity theory may be of particular value in understanding processes of change in complex adaptive systems. Those tenets of complexity theory include the embeddedness of systems within larger systems; generative, contingent causation; emergence of system properties as a result of the local interaction of elements following ‘local rules’ at other levels of systems; non-linearity; feedback; and ‘tipping points’ (or bifurcation). Formal theories would prove useful for analysing change in complex systems if they identified some or all of the following:

- a) the constituent elements of systems and the boundaries of those systems;
- b) the interactions and relationships between elements of systems;
- c) the ‘local rules’ that govern the ways that those interactions occur and the properties that result, in other levels of the system, from those interactions;
- d) the ways that feedback operates to constrain or support change, in intended or unintended directions;
- e) the nature of initial conditions that significantly affect the operations of systems or interactions within systems;

- f) the controlling parameters that determine whether systems tip from one pattern to another; and
- g) the interactions between levels of systems.

Uses for each of these characteristics were proposed.

The other main idea was that formal theories can be ‘layered’ to reflect the ‘layering’ (or embeddedness) of systems in the real world. Both realist approaches and complexity theory understand causation as involving processes at one level of a system that generate outcomes at different levels of a system. Using different formal theories to understand different levels of systems can assist in conceptualizing, and thus managing analysis of, the multiple processes of causation that contribute to outcomes. The example used attachment theory, social judgements theory, social capital theory and social inclusion/exclusion theory. We return to this layered theory in the example below.

The research problem

Early years, early intervention programs (hereafter EI programs) are intended to improve a range of outcomes for children over the life course by reducing risk factors and building protective factors. Common risk and protective factors have been identified for multiple social problems, suggesting that EI programs may reap rewards in multiple areas. The focus on the early years is supported by increasing understanding of the significance of the early years for brain development, socialization and learning.

Some EI programs focus on parenting; some focus on providing services directly to infants and children; many are ‘two generation’ programs that seek to improve outcomes for children directly and by improving situations for their parents (Karoly et al., 1998; Shonkoff and Meisels, 2000). As might be expected, some programs have proved effective (at least for some indicators) and some have not. However these overall outcomes hide differential outcomes for different sub-groups of participants. It is not uncommon for early years programs which ‘work’ for some participants to ‘not work’ – and in some cases to generate negative impacts – for others.

Early Head Start (EHS) is an American EI program which targets families with children aged 0-3 years. It was designed to provide outcomes in child development, family development, staff development and community development. Service delivery strategies are centre-based (primarily child care), home visiting, or a combination of both. A seven-year impact evaluation (Mathematica, 2002) provided analysis of the impacts of 17 sites involving 3001 families (1513 participant and 1488 control group families), on parenting, children’s development, and family development up to the children’s third birthdays.

The evaluation found positive outcomes overall. However, one of the analyses considered outcomes against a ‘maternal risk index’ comprising five risk factors: single parenthood; receiving public assistance; being out of employment, education or training; teenage parenthood; and lacking a high school diploma (Mathematica, 2002: 324). That analysis found some negative outcomes for families with four or five risk factors, but not for those with lower numbers of risk factors. Outcomes included unfavourable, statistically significant impacts on cognitive and language development of children; unfavourable impacts on social-emotional behaviour of children; and an unfavourable impact on harshness of the parent to the child in a specific context no other statistically significant impacts on parenting were found, although some others were described as ‘relatively large and unfavourable’ (pp. 342–4).

A number of other early years programs have also demonstrated less positive outcomes, or on occasions negative outcomes, for more disadvantaged families.

In the EHS example, close examination of the findings revealed that the negative outcomes were not explained by any of the usual suspects. They were not explained by the service model (whether home visiting or centre-based), by lower access to services for the most disadvantaged (the most disadvantaged families in the program accessed more services than the most disadvantaged in the control group), by teenage parenthood; maternal depression; cultural group (Black American/Hispanic); nor by the common ‘instant suggestion’ by colleagues in community services – that the program was ‘not meeting the needs of the target group’. The program was not meeting the needs of the control group, either, but nevertheless the children in families with four or five risk factors in the program scored worse on various outcome indicators than their peers in the control group.

It is not hard to imagine that programs might not be powerful enough to generate positive outcomes for families facing multiple kinds of disadvantage. However, generating negative outcomes is another matter. It provokes two questions. First, how – that is, by what processes – could EI programs cause negative impacts for child development outcomes (in realist terms, a mechanism question)? Second, why were these outcomes concentrated amongst the most disadvantaged (a context question)?

Research setting

This investigation was undertaken as part of a PhD which had two aims. The primary aim was to develop methods and tools for realist evaluation in small-scale community-services settings which had poor-quality outcomes data. The secondary aim was to develop a middle-range theory of negative impacts for early years EI programs. ‘Middle range theory’ (Merton, 1967, quoted in Pawson and Tilley, 1997) is a theory that explains a relatively specific phenomenon but which does so at a level of sufficient generalization to be useful across a range of contexts. Middle-range theories can be used to develop hypotheses that can be tested empirically.

The empirical component of the investigation was undertaken in the evaluation of a community-based family support centre called ‘Pathways for Families’ in Noarlunga, South Australia (Westhorp, 2005). It provided a range of services and programs for families with children under the age of five years. The evaluation was structured to provide a broad, mixed methods evaluation of the programs provided and a much more detailed investigation of a particular program. Called ‘Reflections’, it was adapted from the Circle of Security program and grounded in attachment theory. The program enrolled mother-child dyads in which the child was aged between one and four years and in which there were relationship difficulties. It aimed to enhance parent-child relationships and parenting style and was provided by a multidisciplinary staff team including a child psychologist, speech pathologist, occupational therapist, nurse and senior child care worker. It operated one day a week over 14 to 16 weeks, providing an intensive therapeutic program in the morning and personal and community development activities in the afternoon. Children were cared for on-site and their care was also informed by attachment theory. Mums and kids spent some time together at the beginning of the day and everyone had lunch together.

The overall research process is roughly summarized in Figure 1. Relevant aspects are discussed below, but in brief, the design phase included developing an initial program theory for the Pathways Program, initial literature review and instrument design. That led into two streams of work: undertaking the empirical evaluation, and the first iteration of development of the theory of negative impacts. The realist synthesis was structured in response to both of those. In the final phase, results from the empirical evaluation and the synthesis were used to refine both the program theory and to develop the second iteration of the theory of negative impacts.

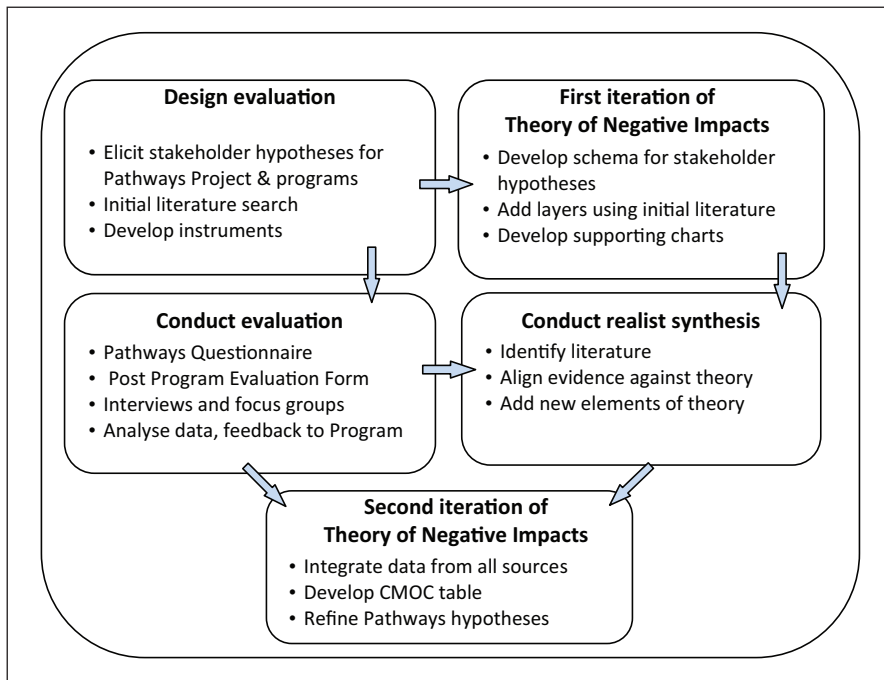


Figure 1. Research process flow chart.

First iteration: A tentative theory

In the first phase of the investigation, two streams of work were undertaken concurrently. One was a small-scale traditional narrative literature search; the other, work with program stakeholders to develop initial, tentative, hypotheses about the ways in which the Project and its programs might achieve their effects. This reflects the realist evaluation approach of developing and testing program theories. The rough hypotheses were described as the ‘attachment’ hypothesis; the ‘strengths’ hypothesis; the ‘social capital hypothesis’; the ‘integrated program’ hypothesis and the ‘parenting knowledge’ hypothesis.

For example, the attachment hypothesis suggested that there would be a high proportion of families experiencing ‘attachment issues’ amongst disadvantaged families. For those families, repairing attachment between the primary caregiver and the child would improve the dyad relationship and the immediate social environment for the child, which would improve children’s cognitive, social and emotional development. This could facilitate more positive outcomes for the child in later life. At the same time, therapeutic outcomes for the parent would improve the parent’s relationships with significant others and enable the parent to pursue their own life goals in relation to family, community participation, education and employment.

These hypotheses were held dear by different stakeholders in the program and there was some tension between the different perspectives. However it seemed unlikely that some of the stakeholders were ‘right’ and others ‘wrong’. It seemed more likely that different stakeholders were talking about approaches that would work with different sub-sets of the target population. Stakeholders included social workers, psychologists, community development workers and allied health professionals. Not surprisingly, those in therapeutic roles tended to support individual or family-level

approaches; those in community development roles tended to support community-level approaches. This suggested that the practitioners' theories could be layered in relation to function, that differences in function related to differences in perceived needs, and that differences in needs may offer clues as to 'for whom' particular approaches may be most effective.

Pawson and Tilley had suggested (1997) that existing theory could and should inform program hypotheses, so the next stage attempted to identify formal theoretical bases to which the stakeholder hypotheses might relate.

Two of the four eventual layers of the first 'theory map' (see Figure 2) – attachment theory (Bowlby, 1982 [1969], 1973, 1988) and social capital (Putnam, 2000) – were self-evident and had been named in the hypotheses. Social judgements theory (Forgas et al., 2003) was identified by reading attachment-related literature. Research had identified that attachment style impacts a variety of social judgements. It seemed entirely feasible, therefore, that social judgements might be a mechanism through which attachment style affected the social capital available to individuals and families.

Other research identified that 'ostracism, social exclusion and rejection' (Williams et al., 2003: 325) also affected social judgements. This became important when the fourth level – social inclusion and exclusion (Levitas, 2003; Sen, 2000) – was added to the model. This level was required to address issues such as social structure, its impacts on access to resources and the ways in which policy addresses (or fails to address) systemic disadvantage.

The first product from the process was a diagram of these four layered theories and the relationships between them (Westthorp, 2008, 2012). Attachment theory lay at the base of the ladder. The broad theory posits that attachment style works as a mechanism generating differences in social judgements, placing social judgements theory at the second level. That in turn influences the nature of relationships that are formed, which influences the extent and nature of social capital available, placing social capital theory at the third level. Social capital in turn influences life outcomes at the societal level (employment status, housing status and so on), represented by social inclusion/exclusion. However, the generative process operates downwards as well. That is, social and economic status and the social norms at play within particular groups influence the social capital available to members of those groups, which influences their experiences of seeking assistance through others, which influences both their relationship experiences and the nature of future social judgements they make, and relationship experiences in turn have the potential to influence the modification of attachment style over the life course.

These four theories have three important features in common. First, all are explicitly based on systems theory: this is important in understanding the dynamics within and between the levels and contributes to the 'complexity consistency' of the model overall.

Second, all address issues of *relationship*, albeit at different levels. Relationships and interactions are integral both to processes of causation in complexity theory and to understandings of mechanism in realist evaluation.

Third, all are primarily theories about mechanisms: they describe processes by which outcomes are generated, rather than outcomes per se, structures or systems. It is this that distinguishes this theory map from others models (such as Bronfenbrenner's [1979] ecological theory of human development) that seek to explain interconnections between individual, family, community and society. This is of course critical to the realist nature of the theory that was being developed.

The second stage of the process was to examine whether the four-level map provided a coherent picture when described across the four attachment styles (secure, avoidant, anxious/ambivalent, and disorganized). A table was developed in matrix format (see Figure 3), with the four attachment styles as columns across the bottom of the page. Five rows, in ascending order, were labelled 'view of self',

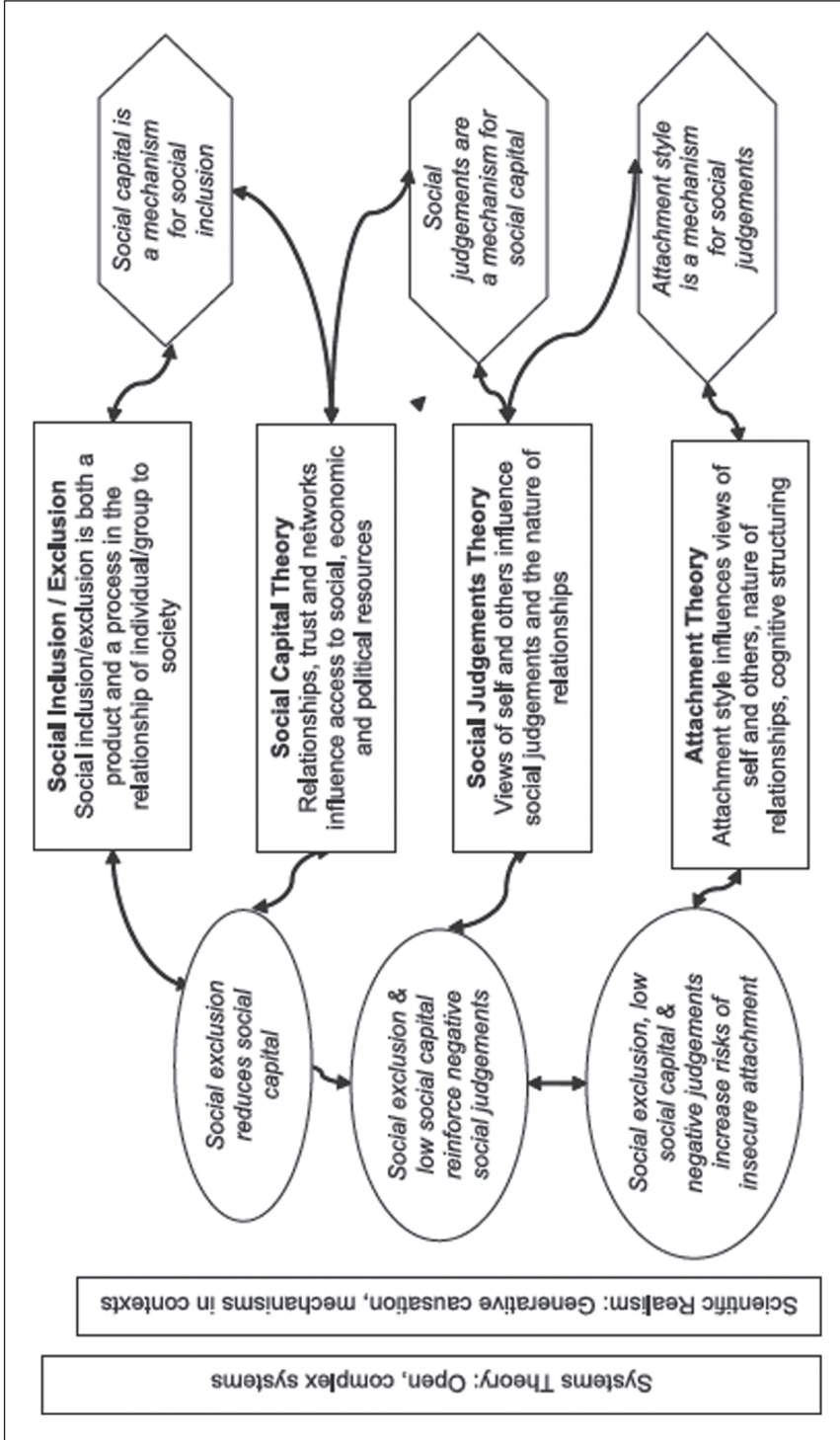


Figure 2. Theory map.

Social inclusion	Active participation in both formal and informal social systems. High chance of productive employment. Work seen as opportunity for learning and advancement.	Active participation in formal systems, less in informal. High chance of employment. Work used to avoid close relationships. Anger-based antisocial behaviour/violence at extreme end of scale.	Active participation in informal systems – less in formal systems. Higher chance of poorer mental health (e.g. depression, anxiety), especially for low SES at more extreme end of ambivalence scale.	High chance of social exclusion. Social systems rejected. High risks of offending, drug abuse, mental health disorders/psychopathologies, aggressive behaviours
Social capital	Access to resources and support through both closed and open/bridging networks. Services used appropriately.	Stronger bridging than closed networks. Constructive 'external' relationships & good access to resources; less access to personal support. Services used reluctantly.	Stronger closed than bridging networks: lower access to resources. For more extreme-volatile relationships lead to isolation? Dependent style of service use.	Poor closed and bridging networks. Poor access to resources and support. Services rejected or used in 'crisis' mode.
Relation Style	Values close relationships. Able to negotiate, compromise, listen. Cooperative problem solving.	Dismiss importance of close relationships. Detachment from emotionally involving interactions.	Dysfunctional beliefs and pessimism re close relationships	Close relationships a source of fear. Aggressive or compulsive. Destructive relationships; high risk of isolation.
View of others	Balanced judgements of others - generally seen as 'available, cooperative and dependable' (Howe et al., 1999: 25) Pro-social & caring attitude to others in need. Able to trust others.	More negative appraisals of others: seen as 'rejecting and intrusive' (Howe et al., 1999: 25). Tendency to rigid/stereotyped judgements. Less pro-social/caring to others in need than secure.	Negative appraisals of others: seen as 'neglecting, insensitive, unpredictable and unreliable' (Howe et al., 1999: 25) Negative/hostile attitudes to out-groups. Anxiety or distress in presence of others in need.	Unable to accurately appraise others: seen as: 'frightening and unavailable' (Howe et al., 1999: 25) or exploitative. Unable to understand others' emotional states.
Self	Balanced, accurate sense of own strengths & weaknesses. Active learning style. Cognitive-affective balance. Able to regulate emotion. High self esteem. Self: 'loved, effective, autonomous and competent' (Howe et al., 1999: 25)	Strong reliance on cognitive strategies, but less exploration than secure. Tendency to dismiss own faults. Lower self esteem than secure, esp. re social competence. Self: 'unloved but self-reliant' (Howe et al., 1999: 25)	Negative self-appraisals & low self-esteem. Negative affect. Cognitive reactions that maintain/exacerbate negative mood. Lower exploration & learning. Self: 'low value, ineffective and dependent' (Howe et al., 1999: 25)	Low self-esteem, 'profound fear and helplessness'. Low exploration; lower cognitive competence. Difficulty regulating affect. May separate semantic & behavioural memory systems. Self: 'confused and bad' (Howe et al., 1999: 25).
	Secure	Avoidant/dismissive	Anxious/ambivalent	Disorganized

Figure 3. Theory map 2: matrix of attachment styles against the theory ladder.

‘view of others’, and ‘relationship style’ (these items were drawn from attachment theory and social judgements theory), social capital and social inclusion/exclusion. Where possible, content in this chart was drawn from existing research and heavily summarized; where this was not possible, logical extrapolations were drawn from the other material. The matrix summarized patterns of judgements, relationships and life outcomes that might be expected for attachment-style sub-groups.

This matrix demonstrated the principle of complexity theory which suggests that intricate or differentiated patterns at one level of a system are generated by simple local rules affecting interactions at lower levels of the system. Smith and Stevens (1996) have argued exactly this point in relation to attachment behaviour. Attachment styles carry with them particular ‘rules’ for behaviour (rules that were learned in infancy about maintaining safety). Here, it is proposed that the connections up and down the ‘theory ladder’ explain how those attachment-level rules ‘ripple out’ to create new rules and new patterns at interpersonal, group and social levels.

The third stage in the process turned attention to interventions, and sought to match broad categories of intervention to the four levels of theory in the model. Neat matches were immediately available at the bottom (attachment-based programs matched against attachment theory) and top (social and economic policy matched against social inclusion and exclusion) levels. A relatively neat match was also available for the social-capital level of the model, where community-development approaches may sit. However, a major category of services – education, skills and personal development programs, which could include parenting skills, anger management, teaching about child development and a range of others – did not fit as neatly. These were labelled ‘personal change’ programs and were placed against the ‘social judgements’ level of the model. It is indeed possible that such programs may influence participants’ ‘views of self or others’ but this remains the weakest ‘conceptual fit’ of the four levels.

Once aligned, it remained to hypothesize – on the basis of the two previous theory maps – participants for whom various interventions may be expected to ‘work’ and those for whom success seemed less likely (see Figure 4). Alongside the levels of the theory map and their associated categories of intervention, it aligned subsets of target populations categorized by attachment style, social capital and social outcomes. This represents the critical ‘for whom’ question in a realist approach. For example, many social and economic policies might be expected to work for the socially included and for those with secure attachments or mild attachment insecurity, but not to work for the socially excluded, of whom higher proportions have insecure or disorganized attachment styles. At the other end of the scale, those with insecure and disorganized/unresolved attachments are likely to benefit from attachment therapies. These are more likely to be effective if other social and economic needs (e.g. income security, housing, food) are met, leaving participants ‘free enough’ to actively engage with the program. There remains, however, a small group with significant attachment issues for whom attachment-based therapies are considered inappropriate.

The final stage of the process was to conceptualize how these patterns might be represented in process form, in relation to particular families entering particular EI programs. Figure 5 was drawn to represent potential pathways. It sketched a rough pathway into services, potential adult responses to services, and in the broadest ways, how those responses could generate negative outcomes for children.

The resulting ‘tentative theory’ was then summarized in words. Summarized here in even briefer form, it argued that:

- Early intervention programs target families with multiple and complex needs.
- ‘Multiple and complex needs’ are systemic in nature and demonstrate key principles of systems theory: self-similarity at different levels of the system; sensitivity to initial conditions; iteration; environment dependence; and emergence.

Level of theory	Nature of Intervention	Works for...	Doesn't work for...
Social inclusion/ exclusion	Social and economic policy Creates contexts for communities, families and individuals	Socially included individuals, families and communities. (Greatest gains to those in least need)	Socially excluded individuals, families and communities. (Least able to make use of resources & opportunities)
Social Capital	Community Development Builds networks and relationships at community level – provides social support	Secure attachment; milder levels of avoidant and anxious attachment; positive social judgements	Socially excluded individuals & families. Severe insecure or disorganised attachment & negative social judgements
Social Judgements	Individual change Builds individual skills, self-esteem, behaviours e.g. parenting, home management skills, assertiveness	Secure attachment; milder levels of avoidant and anxious attachment; positive or relatively neutral social judgements	Socially excluded individuals & families. Severe insecure or disorganised attachment & negative social judgements
Attachment	Attachment therapy Repairs damaged relationships and fundamental perceptions of self and others	Avoidant and anxious/ambivalent attachment; some levels of disorganized attachment	Extreme disorganized attachment; generalized distorted perceptions; 'unavailable' for therapy!; child without attachment figure

Figure 4. Theory map 3: interventions, for whom?

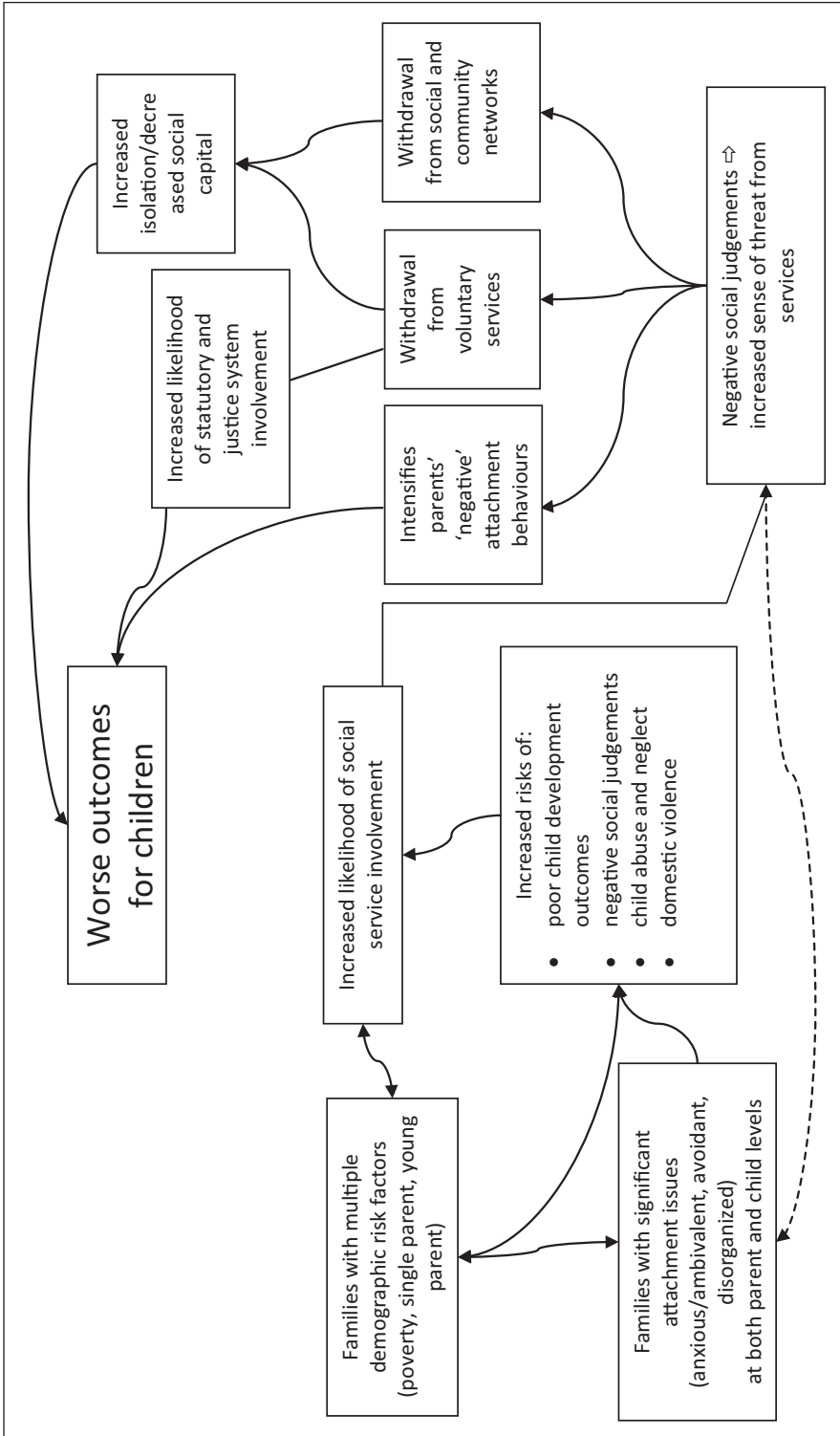


Figure 5. Theory map 4: pathways to negative outcomes.

- Parents in families with multiple and complex needs may be more likely to demonstrate insecure or unresolved attachments. Infants and children in such families may be more likely to develop insecure or disorganized attachments.
- Individuals with insecure and disorganized attachments are likely to demonstrate reduced social skills and are more likely to make negative judgements of themselves and others (Shaver and Mikulincer, 2003). This affects the quality of relationships at all levels: parent-child, adult-adult, individual-group, individual-societal, and group-societal relationships. Poor (or 'broken') relationships¹ in turn generate a series of other negative outcomes at individual, family and social levels.
- Those with difficulties in trust and relationships are likely to experience lower social capital.
- Those with lower social capital are more likely to be socially excluded.
- Those with broken relationships at social level (i.e. the socially excluded) are more likely to manifest, and generate, broken relationships at individual level. In parent-child relationships, this implies that social exclusion will be likely to generate avoidant, ambivalent and disorganized attachment relationships.
- Broken relationships are themselves generators of multiple and complex needs. Mental health issues, drug and alcohol misuse, and antisocial behaviour may all be symptoms of the interplay between insecure or disorganized attachment and social disadvantage. Each may feed the other, and the interplay between them may make each 'resistant' to change.
- Adults with 'broken relationships' (low trust in others) may be more likely to reject social programs, which may explain lower rates of enrolment, higher rates of drop-out, or programs finding the most disadvantaged participants 'hard to engage'.
- Adults with insecure or unresolved attachments who do engage in early intervention programs may be more likely to have negative opinions of themselves triggered by the intervention, or more likely to have their own attachment issues triggered, either of which may lead to less engaged or more aversive parenting.
- Less engaged or more aversive parenting may trigger children's attachment systems. When the attachment system is activated, the exploratory system is 'turned off': the child cannot pay attention to learning until such time as the distress has been alleviated. Children with insecure attachments spend more time in distress: their distress is not alleviated by the caregiver, the attachment system stays activated and the exploratory system stays off. This may explain lower cognitive development outcomes.
- All these mechanisms operate in open systems and therefore tend to generate particular outcomes, rather than there being linear causal relationships between features or levels. Social capital and/or social inclusion may act as a protective mechanism for those with attachment issues by providing other avenues for social, emotional and economic needs to be met. Secure attachment may act as a protective mechanism for those who are acutely disadvantaged, preventing them from reaching truly 'socially excluded' status.

The final stage of this first iteration was to argue how this theory could explain the pattern of impacts found for the Early Head Start program. It was argued that the nature of negative impacts that were found for children in the most disadvantaged families (cognitive development and social-emotional development) holds the clue to their explanation (these are the two spheres that previous research has associated with insecure and disorganized attachment). For children to experience negative impacts as a result of their family's participation in a program, the children's attachment systems must have been triggered often (or more often), *as a direct result of that participation*,

without appropriate alleviation. Sub-groups of participants for whom this might be the case were proposed.

But why should such negative impacts be concentrated amongst families with higher numbers of demographic risk factors? Two explanations were possible: a higher proportion of families with insecure attachments amongst families with multiple demographic risk factors; or demographic risk factors acting as a marker for some other factor, more prevalent amongst more disadvantaged families than amongst less disadvantaged families, which interacted with program participation to create negative impacts. There is research evidence to support both these possibilities (Raikes and Thompson, 2005; Van IJzendoorn and Bakermans-Kranenburg, 1996).

This, then, was the first tentative 'theory of negative impacts'. It reflects complexity-consistent theory in the sense that it reflects multiple levels of reality from the intra-personal to the societal; that it explains causal processes up and down those levels on the basis of interactions between constituent elements of sub-systems; and that it draws on and incorporates formal theories which are themselves complexity-consistent.

Data to refine the theory

Data from two sources was used to refine the theory. The first was the evaluation of the Pathways Project and within it, the Reflections program. The second was a small scale and somewhat modified realist synthesis. In the sections below, examples of ways in which data collection related to the initial rough theory are provided.

The evaluation

Practicalities significantly constrained the nature of the data that could be collected in the evaluation. Most significantly, there was no-one in South Australia at that time who was qualified to assess attachment styles for adults. Assessing attachment styles for children is time-consuming, expensive, requires certification not held by the author, and may have discouraged families from using the service. Given that the primary aim of the project was to develop methods that could be used in resource-poor community services, alternatives had to be developed.

Four data collection instruments were developed. These were the Pathways questionnaire which was designed to be administered on registration with the Program and again six months later or on leaving the Program, whichever was the earlier; a Post-Program Evaluation Form (PPEF), which was completed at the end of each group program or at the end of term for programs which were ongoing; individual interviews with parents (all of whom were mothers) participating in the Reflections program; focus groups with the multi-disciplinary staff team who provided the Reflections program; and focus groups with parents participating in other programs offered through the Centre.

The Pathways questionnaire collected information about family structure, risk factors affecting the family, self-esteem, isolation/access to social support, and community participation. It was most relevant to the 'social capital' level of the theory ladder. It used two common questions from existing social capital questionnaires regarding access to assistance from social networks and trust in others, and asked about service use and participation in community organizations. Post-program response rates for this instrument were disappointingly low and it was not used in revising the theory. The pre-program responses did, however, provide evidentiary support that participating families were 'in scope' for the theory. Some had multiple and complex needs, and of those, some were socially isolated with low access to services. Another, smaller sub-set of families had very high service use.

The PPEF was developed to find out whether a simple in-house instrument could distinguish the mechanisms fired by different programs offered in the centre. Structured on the model of Pawson's 'mechanisms in prison education' example (Pawson and Tilley, 1997: 169–75), it offered 14 statements about ways the program "may have helped". Each of the statements was framed to capture an aspect of participant 'reasoning' and each related to one of the mechanisms stakeholders had hypothesized earlier (e.g. 'This program helped me to recognize when my child needs comfort and when he or she needs room to explore' related to the attachment hypothesis). Participants were asked to rate how much each statement applied to them on a five point scale ('not at all' to 'a great deal').

Factor analysis of the responses identified five main mechanisms which were labelled stress reduction, reduction of shame and guilt, building an internal locus of control, a 'therapeutic' mechanism which comprised understanding and dealing with the effects of the past and improved self-image, and an 'understanding the child' mechanism.

It is important to note that this instrument did not set out to test any of these mechanisms 'properly'. Nor was the instrument intended to operate as a single *scale* – a collection of items reflecting a common underlying *cause* – but as an *index* – a collection of items which may share *effects* (DeVellis, 2003: 10). Even more accurately, it was intended to operate as a set of small indices within one instrument, each index comprising only a couple of items, any number of which could operate concurrently. Nevertheless, analysis of variance across results for five programs ($N = 116$, $p = .000$ in all cases) showed statistically significant differences between the mechanisms fired by various programs, with the two programs based in attachment theory most strongly firing the locus of control, therapeutic and understanding of the child mechanisms. The main outcome from a theory refinement perspective was to highlight the greater than anticipated importance of locus of control in the attachment-informed programs and its relationship to understanding the child.

The PPEF also collected brief parent-report data on perceived outcomes for child behaviour and parent-child relationships. Correlations analysis showed a medium association between the therapy mechanism and dealing more positively with children's behaviour. Medium associations were also found between understanding the child, locus of control, the therapeutic mechanism and improved relationships with the child. These findings provided evidence that some changes were being generated and that these changes lay mainly at the two bottom levels of the theory ladder (attachment and social judgements). This in turn provided the justification for using qualitative data from the Reflections program for further theory refinement: if the program did appear to be generating outcomes through roughly anticipated mechanisms, it remained reasonable to use the more detailed qualitative data to try to understand how, why and for whom it worked (or did not).

Interviews and focus groups for the Reflections Program were structured to develop a realist understanding of attachment and relationship issues addressed through the program. Twelve participant interviews were conducted. Transcripts were printed out and coded. Codes identified participant context, mechanisms (resources), mechanisms (reasoning), parent outcomes, child outcomes, parent-child relationship outcomes, and program strategies (participants' comments about program delivery). Despite the very small number of participants, four sub-groups of parents were identified for whom the program achieved different sets of outcomes and appeared to work in different ways. Data about social judgements and social capital turned out to contribute to distinguishing between subgroups. There were two parents for whom no positive outcomes were identified. Service providers wondered whether particular kinds of mental health issues might be at play, and this informed one arm of the subsequent literature review.

The theory ladder supported analysis by providing a structure within which the same level could be considered as causal, in relation to the level above it, and concurrently as context for, and/or

outcome of, the level below it. This is consistent with realist philosophy in which the same thing can be context, mechanism or outcome depending on the particular analysis being undertaken. For example, some parents talked about changes in the ways they interpreted and responded to (i.e. made social judgements about) others' judgements of them. These changes were an outcome of the program at the social judgements level of theory. However, they also contributed to other changes that the parents then made both in relation to their children (the attachment level of theory) and other adults (the social capital level of theory).

The realist synthesis

The very small scale of the empirical work undertaken for this PhD created real limitations in using its outcomes to 'support, refute or refine' the fledgling theory of negative impacts. Further, the program in which the qualitative empirical work was undertaken – (Reflections) – differed significantly from the program in which the original problem was identified (Early Head Start). Neither were the evaluation methodologies comparable. On what possible basis might one possibly generalize – or even hypothesize a connection between – such different programs and approaches?

Enter realist synthesis. Pawson (2006, 2002; Pawson et al., 2004) developed realist synthesis to 'pass on *collective* wisdom about the successes and failures of previous initiatives in particular policy domains' and in so doing to 'harness together the partial and haphazard efforts of discrete and dispersed research groups' (Pawson, 2006: 11).

Realist synthesis usually starts with an initial 'rough theory' about the mechanisms by which and the contexts in which different patterns of outcomes will be generated. It then uses each document as a case study to refine that theory (Pawson, 2006: 74). Rather than starting with a middle-level theory about a program mechanism, this review started with an outcomes pattern and looked for the contexts and mechanisms that might explain it. Given the constraints (a single chapter of a PhD) only 50 documents were included and materials were limited to those in English and available electronically.

Items were selected for their relevance to one or more specific topics: contexts and mechanisms for generation of negative outcomes in early years interventions; the influence of adult attachment style for engagement in such programs; and the relationships between reflective capacity, personality disorders and attachment. Priority was afforded to literature relating to Early Head Start (the program in which the research problem was initially identified) and the Circle of Security (the program on which Reflections was based) and to other EI literature which identified negative outcomes overall or for sub-groups of participants.

Consistent with a realist synthesis approach, selected materials were of different types: program evaluations and non-evaluation research; small and large scale; qualitative and quantitative designs; case studies, pre-post designs, and RCTs; and previous reviews or meta-analyses. Standard literature searches using 'linked' terms of interest (e.g. 'early intervention' and 'negative impacts'; 'personality disorder' and 'attachment theory'), and 'snowballing' from references were used. The great majority of materials were identified *after* the Reflections analysis reported in the previous section had been completed and written up, enabling investigation of themes and hypotheses arising from that analysis.

Analysis was undertaken manually (i.e. without using software). As each item was read, relevant elements were summarized in 'theory boxes', which were later used to compile CMO charts.

The realist synthesis identified five main context-mechanism interactions which might operate through EI programs to explain the generation of negative outcomes.

The first relates to parents' attachment style (the bottom layer of the theory). An emerging literature identifies how adults with different attachment styles engage differently with, and make different use of, social programs. Parenting programs which improve parenting sensitivity contribute to secure attachment for the child, which contributes to improved child development outcomes. Importantly, some research identified that this pattern was more common for parents whose own attachment style was secure. Other articles identified that parents with more anxious attachment styles tended to engage with program staff more in relation to their own issues or the crises in their own lives, and that there was less direct attention to child development outcomes. Direct attention to child development outcomes was associated with better outcomes for children so less attention to child development may potentially contribute to poorer child development outcomes.

The second related to use of social support (the social capital layer of the theory). Parents with insecure attachments and high numbers of conflictual relationships tended to drop out of services, and also accessed less informal social support and coped increasingly poorly over time (McKelvey et al., 2002). This may generate less sensitive parenting. Where participating parents stayed involved but partners or other family members objected either to the programs or their perceived outcomes (e.g. increased assertiveness), family conflict may increase. High levels of conflict (in particular, between parents) may also contribute to a child's fear and/or reluctance to approach parents for comfort and support. Both factors (parental coping and conflict) may thus contribute to insecure or disorganized attachment and thus to poorer child development outcomes.

The third sub-set related to parent mental health (not directly represented in the model, but in some cases related to attachment). Where parents suffer from borderline personality disorder – and perhaps other related disorders – the strategies used in attachment-based parenting programs can trigger a 'catastrophic' response (Fonagy and Batemen, 2006) with the potential to disrupt parent-service provider and parent-child relationships. Where there are high levels of other mental health issues, parenting education models may be inappropriate, perhaps because they trigger reduction in parental self-efficacy (and/or increase depression levels) or potentially because they trigger reactions of the style described for personality disorders. Where maternal depression interacts with insecure adult attachment styles, any of the 'negative' mechanisms associated with attachment insecurity may be heightened and the impacts on negative outcomes for children may be strengthened.

The fourth set related to increased stress for parents (not directly represented in the model, but potentially relevant to social capital and social exclusion). High parenting stress and low use of social support is commonly identified in the child development literature as being related to poorer child development outcomes. What was identified in this review were ways that programs – while intending to be helpful – were reported to increase stressors or decrease use of social support by parents, and the contexts in which they might do so. Where parents were already suffering significant economic stress and participation in programs increased costs (for example, for child care or transport) that could increase parental stress and thus contribute to less sensitive parenting.

The final set identified circumstances in which poorer child development outcomes did not seem to work through a parenting pathway (not represented in the model). Where parents provide relatively insensitive parenting and programs increase overall use of child-care or the number of child-care providers in the first year of life, levels of child attachment insecurity may increase (Belsky, 2001).

The literature review – despite its significant limitations – offered support for the overall structure of the theory of negative impacts. However, it also identified a range of elements that had not been predicted in the initial theory and thus contributed to its refinement.

Second iteration: The refined theory of negative impacts

In the final stage, the materials summarized above from the evaluation and the literature synthesis were drawn together in a chart comprising more than 20, much more detailed CMO statements. Each row of the table can be read as a statement. To provide just one example (with added specification of the C, M and O elements):

In contexts of high poverty and high time demands on parents (for example, for the working poor) [Parent C], and/or in contexts of high poverty but also high social support [Parent C], programs which use a parent training model but which do not negotiate program content or methods with parents [Program C], are likely to be experienced by parents as an added burden, which increases parental stress levels [Parent M1], which are likely to contribute to increased negativity towards children and towards the demands of parenting [Parent M2] resulting in less sensitive parenting [O1], which is likely to generate [through mechanisms not specified here but clearly defined in previous research] increased rates of insecure or disorganized child attachment [O2] which is likely to contribute to less positive child development outcomes [O3].

That table replaced the initial fourth map in the theory maps, thus considerably refining the draft theory and providing the basis for a rich set of hypotheses for potential future research.

Some of the program hypotheses for the Pathways Program were also refined using data from the evaluation and the literature synthesis. For example, the attachment hypothesis described earlier was refined to include a change to the nature of anticipated outcomes (to include strengthening internal locus of control); different mechanisms for parents with different levels of reflective capacity on entry to the program and the outcomes that may be associated with those mechanisms (CMO), and particular aspects of program delivery ('using a structured but individuated approach, and grounded in 'safe haven' relationships' – program context).

Conclusion

This article has demonstrated the use of complexity-consistent theory and layered theory in a realist investigation of a real-world problem. In sociological terms, the theory maps and hypotheses based upon them provided a framework for understanding the interactions of agency and structure over time, explaining differentiated patterns of outcomes for sub-groups and the social and personal structuring of those patterns. In complexity-theory terms, they provided a way of understanding how interactions between components of systems could generate outcomes at quite different levels of systems over time, with all levels of the systems both generating and constraining the outcomes.

In methodological terms, integrating realist evaluation and realist synthesis strengthened the findings of each. The literature provided direct evidence supporting the CMOC pattern arising from the Reflections data, adding weight to findings from a very small sample. The literature review would not have investigated personality disorders if it was not for the tentative identification of their significance through the Reflections evaluation; and the understanding of why some attachment-theory-based parenting programs were inappropriate for people with some personality disorders would not have been possible without the literature review.

In practical terms, the problem that was investigated has significant implications. Early school leaving, drug and alcohol abuse, crime, teenage pregnancy and so on have significant social and economic costs. Success in reducing them can provide significant benefits and failing to reduce

them may cost much more than just the direct costs of the failed programs themselves. Where negative impacts are generated, the costs are, potentially, very high.

This methodological experiment has suggested, based on evidence, how and why good quality programs could generate no - or negative - outcomes for some participants and why it is that fundamentally different kinds of programs would be necessary for different sub-groups to achieve similar kinds of outcomes. Each of the CMO configurations in the refined theory suggests some implication for practice. Taken together, they imply the need for careful program design and excellent assessment and referral processes to assist ‘the right families’ to reach ‘the right programs’.

It is, however, important to remember here that the theory of negative impacts and the CMOs that refine it are very tentative hypotheses developed using small-scale tests of new (or varied) realist methods. If this work were to be developed further, a useful first stage would be to undertake a more comprehensive realist synthesis to test and refine at least some of the hypotheses. Those refined hypotheses could then be tested in the evaluation of ongoing early intervention programs, with all the potential benefits that such evaluation may bring.

Note

1. ‘Broken relationships theory’ was the working title I originally used while developing the theory.

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