Decision Making Processes in the Emergency Department and

Implications for HRM

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ABSTRACT: We conduct a qualitative study of decision making processes in a public hospital emergency department (ED) in Australia. Our model shows ED doctors prioritise (1) rational decision making when the hospital system is operating below capacity and the patient problem is routine; (2) intuition when the system is below capacity and the patient problem is complex; (3) both rationality and intuition when the system is at or above capacity and the patient problem is routine; and (4) rationality, intuition and emotion when the system is at or above capacity and the patient problem is complex. Shifting priorities between rationality, intuition and emotion according to the patient’s problem and system capacity creates HRM challenges for training and retention of ED doctors.

Keywords: Hospital management, health professions, health workforce issues, emergency department, decision making, qualitative methods

Hospital emergency departments pose major workforce challenges for Australian healthcare. Emergency departments are a training ground for junior doctors in a decision making process for patient care which is complex, timely and, occasionally, emotive. Some scholars in the management literature have argued that decision making in emergency departments resembles crisis decision making (Coget and Keller, 2010). However, little is known about how this decision making process plays out in practice in Australia’s resource-constrained public health system and about the challenges created for HRM issues such as training and retention. In this paper, we contribute to an improved understanding of ED decision making processes by addressing the following research questions: How do doctors working in public hospital emergency departments in Australia make decisions? What are the implications of these decision making processes for HRM?

These are important questions for three reasons. First, emergency departments (ED’s) are a key component of the Australian health care system, with annual patient presentations to ED’s of public hospitals rising by 44 per cent in the decade to 2008-09. Second, federal government measures
intended to almost double the number of medical graduates produced each year in Australia are placing pressure on the ED workforce (Brazil 2010). Because completing an ED rotation is mandatory for general medical registration in most States and Territories, ED managers have questioned the system’s ability to cope with the training demands of the increasing volume of graduates (Chong, Weiland et al. 2010). Third, mastering the complexity of the decision making process in emergency medicine is an ongoing challenge for both junior and senior doctors. Studies report that many junior doctors feel unprepared for the decision making context of the ED (Dent, Crotty et al. 2006, Duns, Weiland et al. 2008). At the same time, senior doctors face administrative pressures in making and implementing timely decisions about patient diagnosis and treatment, including the introduction in 2012 of a ‘four hour rule’ for patient flow out of the ED.

We investigate our research questions by conducting a qualitative study of emergency doctors in a large public hospital in Australia. Observational and interview data are collected and analysed to develop a model of ED decision making. In response to our first research question, we find that ED doctors prioritise a rational base for decision making when the hospital system is operating below capacity and the patient problem is routine; an intuitive base when the system is below capacity and the patient problem is complex; both rational and intuitive bases when the system is at or above capacity and the patient problem is routine; and rational, intuitive and emotional bases when the system is at or above capacity and the patient problem is complex. In response to our second research question, we find that the need to shift priorities between rational, intuitive and emotional decision making according to the patient’s problem and capacity of the system creates HRM challenges for training doctors in ED decision making, recruiting doctors into Emergency Medicine as a specialty, and retention of experienced ED doctors in the public health system.

DECISION MAKING IN THE ED

A decision process is defined as “a set of actions and dynamic factors that begins with the identification of a stimulus for action and ends with a specific commitment to action” (Mintzberg, Raisinghani et al. 1976: 246). Perspectives on decision making span a continuum between a cognitive process comprising a sequence of discrete steps at the rational-analytic end and anarchy as the limit to
rationality at the other end (Langley, Mintzberg et al. 1995). Seminal at the rational-analytic end is Simon’s work on bounded rationality, which proposes decision makers are ‘satisficers’ who search for alternatives until they find one that satisfies evaluation criteria rather than the optimal solution (Simon 1976). At the anarchy end lies the garbage can model, in which solutions randomly meet up with participants, choice opportunities, and problems (Cohen, March et al. 1972, Padgett 1980). In between the two ends, the rationality of decision processes is impacted by factors such as bureaucracy (Cyert and March 1963) and politics (Allison 1971, Pettigrew 1973, Pfeffer and Salancik 1974). As the continuum moves away from the sequential theories and linear thinking of the rational-analytic end, intuition also plays a role in decision making (Dane and Pratt 2007, Vance, Groves et al. 2007).

Intuition involves “a holistic hunch or judgment derived from a subconscious synthesis of information across one’s diverse experience” (Vance, Groves et al. 2007: 169). It is based on sensing and feeling grounded in a decision maker’s expertise, experience, and perceptions (Mintzberg and Westley 2001, Sadler-Smith and Shefy 2004, Miller and Ireland 2005).

A large body of organizational research points to the importance of context on the decision making process. Research in stable contexts supports approaching decisions from a rational basis by decomposing them into stages, although some stages may be repeated, skipped, extended or re-ordered depending on the type of decision and decision making context (Witte 1972, Mintzberg, Raisinghani et al. 1976, Nutt 1984, Hickson, Butler et al. 1986, Eisenhardt 1989, Langley 1989, Laroche 1995, Sutcliffe and McNamara 2001, Plambeck and Weber 2009, Klingebiel and De Meyer 2013). Decisions have been found to be more effective in structured task contexts when decision makers rely on analysis of relevant information when generating, evaluating and selecting among alternatives (Fredrickson 1984, Dean and Sharfman 1996, Nutt 2008), whereas intuition becomes important in unstructured task situations and high-stress or fast-paced environments (Eisenhardt 1989, Mintzberg and Westley 2001, Useem, Cook et al. 2005, Dane and Pratt 2007). These latter decision-making contexts are characterised by unpredictability (Bigley & Roberts, 2001; Weick & Roberts, 1993), high pace and turbulence (Eisenhardt 1989), and rapid change and uncertainty (Dane & Pratt, 2007). Decision making in these extreme contexts are difficult because time pressures and incomplete
information provide greater opportunity for error. Examples of extreme contexts include airplane flight decks (Weick 1990) and high-technology sectors (Eisenhardt 1989).

Research shows that hospital emergency departments (EDs) also represent extreme contexts for decision making. In a recent study in the United States, Coget and Keller (2010) proposed that ED decision making is likely to involve flows of thinking (rational basis), intuiting (intuition basis), and feeling (emotional basis) interact in feedback loops. While Coget and Keller’s (2010) model offers a useful starting point for answering our research questions, their model is grounded in the experience of a single doctor in the United States. Differences between national health care contexts suggest the model may not be an accurate representation of decision making in Australian ED’s. In contrast to the individualised patient care characteristic of the US private health system, the publicly funded nature of the Australian system requires that ED doctors emphasise equity of access for all patients while keeping costs within government budgets. Moreover, Coget and Keller’s (2010) model overlooks the use of ED’s as training sites, an important tenet of doctor training in Australia (Brazil, 2010). We describe the Australian context for emergency medicine in more detail in the next section.

**EMERGENCY DEPARTMENTS IN AUSTRALIAN HOSPITALS**

Located at the interface between local community and hospital, emergency departments perform the “core business of treating new presentations” (Richardson, Kelly et al. 2009). Presenting patients are classified into an urgency category by triage nurses or by transporting paramedics. ED doctors then begin a decision making process of assessing the patient’s symptoms, diagnosing the patient’s condition, and developing a plan for patient treatment involving discharge or hospital admission to departments such as intensive care, surgery and general medicine. Hospitals must ensure (1) sufficient beds are available to cope with patient admissions through the ED and (2) as many patients as possible awaiting medical treatment and surgical procedures through non-emergency channels, classified as elective patients, are allocated beds (Jones, Joy et al. 2002). Balancing these two competing objectives requires careful management of hospital capacity. The Australian Medical Association considers a hospital to be at its optimum capacity in terms of efficiency, quality and
safety when the bed occupancy rate equals 85 per cent. If this rate is exceeded, ED overcrowding and access block result. ED overcrowding is defined by the Australasian College of Emergency Medicine as ‘the situation where ED function is impeded by the number of patients waiting to be seen, undergoing assessment and treatment, or waiting for departure, exceeding the physical or staffing capacity of the department’. Access block is defined as ‘the situation where patients are unable to gain access to appropriate hospital beds within a reasonable amount of time, no greater than 8 hours.’

The work of the ED is overseen by senior doctors who have completed training in the specialty of Emergency Medicine and are accredited as Fellows of the Australasian College of Emergency Medicine (FACEMs). Some EDs in Australia perform their core business of treating new presenting patients while functioning as approved teaching sites. In these EDs, FACEMs provide master-apprenticeship training to (1) registrars completing their provisional and advanced training in emergency medicine as a clinical specialty, and (2) junior doctors (interns and residents) completing basic training in medicine before choosing a specialty. A key focus of this training is effective decision making for patient diagnosis and treatment. In the next section, we describe the method we used to investigate this decision making process and its implications for HRM.

METHOD

We addressed our research questions by undertaking a qualitative study in an ED attached to a large teaching hospital in an Australian capital city. We collected data by observing doctors in the ED. Observation permitted collection of data about ED doctor decision making in practice for a wide variety of patient conditions and for a range of hospital capacity levels. This variety is essential for theory building as it permits a search for general patterns (Eisenhardt 1989) and increases confidence in their uniformity (Golden-Biddle and Locke 1993). Rostered on for each shift in the ED were two FACEMs (categorised in the fieldsite hospital as ‘consultants’) who each supervised advanced and provisional training of registrars and basic training of multiple interns and residents. Triangulation of insights from multiple data sources improved the interpretive rigour of our findings (Jick 1979, Denzin and Lincoln 1994). One hundred hours of observational data were collected by the first and second author, usually independently but occasionally together. Observations occurred in
approximately four-hour blocks sampled for theoretical variability across clinical shifts in terms of supervising consultant, timing (morning, afternoon, evening), and day of the week. Each observer wrote real-time fieldnotes as they shadowed ED doctors as non-participant observers (Adler & Adler, 1998). Doctors provided explanations of their work in assessing, diagnosing, treating, and negotiating individual patient cases and in training other doctors in decision making, which were recorded as fieldnotes (Spradley 1980, Adler and Adler 1998). Consistent with Barley (1986), these handwritten fieldnotes were typed up as soon as possible after each shift.

Observational data was augmented with interview data. Interviews were conducted with 24 senior FACEMS, who represented almost the entire population of consultants regularly employed by the ED. These interviews lasted one hour and focused on how senior consultants made decisions in the ED. Interviews were also conducted with ten registrars who were completing their advanced training in the ED. These semi-structured interviews lasted 30 minutes and focused on the registrar’s training experiences as well as how they were recruited into emergency medicine as their specialty area. The first author also observed group teaching sessions in the basic training program, workshops and seminars in the provisional and advanced training programs, and two simulations between the ED and other departments used in advanced training. In both interview and observational data collection and analysis, ethical protocols were followed to protect the anonymity of respondents.

Observational and interview data were analysed using recommended principles for thematic coding (eg Eisenhardt 1989, Strauss and Corbin 1990, Miles and Huberman 1994). We began with the interview data, coding for themes on the rational, intuitive and emotional bases of decision making. We then searched the fieldnotes for observations that confirmed or challenged these insights. Analysis then proceeded as an iterative process of constant comparison within and between interview data and fieldnotes (Eisenhardt 1989), in which we refined our insights about how ED doctors make decisions. Throughout this process, emergent explanations were viewed as tentative until our theoretical insights began to converge across the multiple sources of data (Strauss and Corbin 1990).

A MODEL OF DECISION MAKING IN THE ED
Our analysis of our first research question shows that ED doctors in Australian hospitals rely on rational, intuitive and emotional bases for their decision making. The decision making process involves assimilating patient symptoms and results of investigations, diagnosis of the patient’s probable condition, and developing and negotiating a plan to treat the patient either through discharge or admission into the most appropriate department in the hospital. This process is fundamentally grounded in: (1) the rational scientific knowledge base of the medical profession (*rational base*); (2) the intuition that ED doctors develop over their careers for making sense of complex patient puzzles in the context of an interconnected hospital system (*intuitive base*); and (3) the emotion of empathy in communicating with patients and their families throughout all stages of the process (*emotional base*).

Our analysis shows the relative priorities which experienced ED doctors place on rationality, intuition and emotion differ according to the contextual situation.

The results of our analysis are presented in Figure 1. The model shows how experienced ED doctors prioritise different decision making bases according to the interplay between two dimensions: the symptoms of the patient and the capacity of the hospital system. First, *patient symptoms* vary according to whether their *clinical complexity is low or high*. Patients with low clinical complexity have symptoms that are relatively straightforward for doctors to categorise because the patient’s history, physical examination, and results of pertinent investigations point to a likely underlying cause for their ailment. In contrast, patients with high clinical complexity have multiple and/or ambiguous symptoms that are difficult to diagnose unequivocally even after collection of historical and investigative information. Second, the capacity of the ED and the hospital *system* varies according to whether the hospital is *under capacity* or *over or at capacity*. Negotiating patient plans with other departments is easier when there is sufficient excess capacity so that beds are available in wards and operating theatres. Negotiation becomes contested when beds are unavailable and the ED suffers from overcrowding or access block. The two dimensions of patient symptoms and system capacity interact to create four decision making scenarios in which different bases of decision making are prioritised.

**Rational Decision Making: System below capacity, Low clinical complexity**
When the hospital system is operating below capacity and the patient’s symptoms are of low clinical complexity, ED doctors prioritise the rational base of decision making: “You know what the ailment is most likely to be, what it is not, and the patient’s likely path through the department and the probable outcome”. This path through the ED depends on negotiations with doctors and health professionals in other departments. The path proceeds rationally when there is sufficient capacity in the system for each interdepartmental link to perform their work in a timely manner and when there is sufficient clarity about the patient condition that the plan for treatment is relatively uncontested.

Consider a patient who presents with chest pain typical of heart disease, which is of low clinical complexity and easily categorised. The patient’s underlying condition can be assessed and diagnosed according to algorithms grounded in the rigorous scientific research of the medical profession, while negotiation of the patient plan is standardised through a protocol agreed between the Emergency, General Medicine and Cardiology departments. The ED doctor will take an initial electrocardiogram (ECG) reading of the patient’s cardiac function along with blood samples. The doctor will then request the pathology tests on the patient’s blood, including a troponin test to help determine whether the patient has suffered a heart attack. At a later point, the ED doctor will further assess the state of the patient’s heart and lungs with a chest x-ray. If the ED doctor is satisfied that clinical data from the patient’s history, examination, and tests results are consistent with potential heart disease and urgent intervention is not required, the patient is placed on the standardised ‘chest pain pathway’. This is an algorithm consisting of a further blood test taken several hours after presentation to rule out a heart attack, and a stress test on a treadmill. If the patient’s heart manages the test adequately, the patient is then discharged with a low likelihood of significant heart disease.

The facilities in the ED enhance the doctor’s ability to use a rational base for decision making. Computer systems provide an overview of the bed status of the ED including a patient’s presenting ailment, length of stay, treating doctor, and triage category. These systems also record the results of patient blood tests, while dedicated monitors show patient x-rays and CT scans. The relevant patient algorithms for a variety of patient conditions are displayed on the walls. When a patient’s symptoms fit conclusively within an algorithm and there are no capacity constraints,
decision making for the ED doctor proceeds rationally through the stages of assessment, diagnosis, and negotiating and implementing a patient plan.

**Intuitive Decision Making: System below capacity, High clinical complexity**

When the hospital system is operating at below capacity and patient symptoms suggest high clinical complexity, the rational base remains present but decreases in importance as the ED doctor shifts their decision making priority to the intuitive base to make sense of the patient’s symptoms. An interview respondent explained how rationality and intuition interact when assessing symptoms:

*There’s my training, the clinical data, and the scientific facts as I know them. Then there are my experiences and the communicated experiences of my colleagues that I have interacted with – what I’ve seen and what I’ve heard. These two things come together to try and tell me the state of play as it is, with each unique patient presentation.*

The weight placed on intuition in this decision making process increases in importance when there are missing pieces of data or conflicting information, such as when the patient is not sufficiently lucid to provide a reliable history of their condition. Ambiguity also arises when symptoms consistent with multiple diagnoses are present and patient test results are inconclusive. This makes negotiation of a patient plan more difficult as questions remain over whether the patient is safe to discharge or needs to be admitted and into which department that admission should appropriately occur. It follows that when clinical complexity is high and the hospital has excess capacity, the ED doctor will reach into the experience they have developed over countless patient presentations and search for relevant cues to assist a diagnosis and, at the same time, will use their intuition to seize windows of opportunity for negotiating with doctors in speciality areas for input, as illustrates in these fieldnotes:

*A registrar is concerned about the diagnosis of a patient, suspected to be suffering from kidney failure. The registrar now believes the results of the patient’s chest x-rays are symptomatic of a heart attack. After asking the registrar to phone Cardiology for advice, the supervising ED consultant (senior FACEM doctor) talks to the patient, asking if he has had any fevers and feeling his ankles. The registrar reports that Cardiology has assessed the ECG results as not consistent with a heart attack. The ED consultant disagrees. Intuition - which integrates prior experience, tacit cues from the patient, and medical test results – suggests a heart attack cannot yet be ruled out. The ED consultant resolves to continue to monitor the patient’s symptoms and renegotiate for admission into Cardiology if appropriate.*

**Rational and Intuitive Decision Making: System at or above capacity, Clinical complexity low**

When the hospital system is operating at or over capacity and the patient demonstrates symptoms of low clinical complexity, the experienced ED doctor places equal priority on the rational
and intuitive bases for decision making. Because the patient symptoms are relatively straightforward, the doctor prioritises the rational base in the initial stages of assessing symptoms and diagnosing the cause. Standardised tests are conducted according to algorithms, the results interpreted according to the rules and thresholds of medical science. Once the diagnosis is made, the ED doctor must shift to prioritising the intuitive base in order to develop and negotiate a plan for treatment in a hospital system that is at or over full capacity. ED overcrowding and, if it escalates, access block requires senior ED doctors use intuition to ‘portfolio manage’ patients. An interview respondent explained:

I remember walking along, mentally sort of checking each patient off, and I didn’t realise I was doing it. What I was doing was seeing where the patient had evolved in their plan and who was safe to move into the corridor or around the corner. Who could I find? I needed extra capacity in case another seriously ill patient came in.

As this interview quote highlights, systemic capacity constraints compromise the ability of the ED doctor to progress patient plans. For those patient cases with symptoms of low clinical complexity, the priority for rational decision making in the initial stages of assessment and diagnosis switches to a priority for intuition in progressing a patient plan and, if hospital admission is required, negotiating the plan with other departments. Our fieldnotes demonstrate a process of negotiation:

A patient on ventilation is transferred from a country hospital, where tests had indicated a possible stroke. Confirming the diagnosis and developing a plan is routine for the ED consultant and grounded in the rational base: transport to radiology for a scan of the head to confirm bleeding and return of the patient to the ED before negotiation with the Intensive Care Unit (ICU) for admission. However, monitoring the patient’s ventilation in the ED will consume staff resources, which is problematic given capacity constraints on the ED through overcrowding. To facilitate more timely progression of the patient plan, the ED consultant switches to an intuitive decision making base. Phoning ICU to confirm that beds are available, the ED consultant opportunistically requests an early examination of the potential stroke patient by an ICU doctor currently in the ED consulting on another patient. The ED consultant had sensed that the ICU doctor may be sympathetic to the visible overcrowding. The ICU doctor performs the examination and departs. While the scan is being performed, the ED consultant contacts the ICU doctor, who agrees to relax the standard procedure and sanction the transfer of the patient to ICU immediately following the scan.

Rational, Intuitive and Emotional Decision Making: System at or over capacity, Clinical complexity high

When the hospital system is operating at or over capacity and the patient’s symptoms have high clinical complexity, rational and intuitive decision making bases may entwine with an emotive communicative element. This applies because the ED doctor confronts a situation where the ambiguities in diagnosing and referring the patient may be exacerbated by resource constraints. In
these extreme circumstances, our informant argued the ED doctor must recognise any emotional basis
to their decision making and actively push it aside to minimise bias. However, rational and intuitive
decision making may be supplemented with the use of emotional communication to achieve a desired
outcome, as this interview quote suggests:

“It can be a tool can’t it? We all either use emotion to colour our communication don’t we? And we
can use that as a tool, whether meaning to or not. To demonstrate how much we want something to
happen, how important we perceive the situation to be”.

When the ED is overcrowded or the hospital has access block, and clinical complexity is high,
the ED doctor is prone to incorporating emotional communication with their intuitive and rational
decision making skills. The combination of systemic capacity and patient ambiguity causes problems
for the doctor because negotiation of the patient plan becomes randomised. Often the ED doctor is
unable to progress the patient plan because they are waiting for specialist doctor diagnosis or inpatient
beds. This may occur because the specialist is involved in treatment of other patients for long periods
of time in the operating theatre. In these circumstances the ED doctor may leverage their intuitive and
rational decision making bases with the use of emotional communication to enter negotiations on the
patient plan with the relevant specialty doctor, as shown in this extract from our fieldnotes:

The ED consultant phones the gynaecologist with her initial assessment, ‘We’re worried this girl has
an evolving sepsis [blood poisoning] … We’d really appreciate some early input from you’. One hour
later the patient has not received a diagnostic visit from the gynaecologist. When the gynaecologist
phones, the ED consultant urges loudly, ‘This girl has actually got sepsis and I think in terms of
priorities she is more important than stable clinic patients’. The gynaecologist complains of access
block, protesting my boss ‘won’t let me leave clinic [theatre]’. Visibly frustrated, the ED consultant
calls the gynaecologist’s boss before phoning the gynaecologist and emphasising: ‘Has anybody
spoken to you about where we’re up to? We’re worried this patient has a hole in her bowel’. The
gynaecologist arrives three minutes later.

DISCUSSION

Our findings show that the decision making approaches of ED doctors vary according to the
complexity of the patient presentation and capacity of the hospital system. These dimensions
determine whether the basis for the doctor’s decision making is primarily driven by rationality or
intuition and whether emotion plays a role in negotiations with other departments. Our model shows
that ED doctors prioritise a rational base for decision making when the hospital system is operating
below capacity and the clinical complexity of the patient’s condition is low; an intuitive base when
the system is below capacity and the patient’s clinical complexity is high; both rational and intuitive bases when the system is at or above capacity and the patient’s clinical complexity is low; and rational, intuitive and emotional bases for decision making when the system is at or above capacity and the patient’s clinical complexity is high.

Our decision making model has important implications for training doctors in the ED. Our model suggests that while doctors in basic training may have sufficient foundational knowledge from prior study to accommodate rational decision making when patient conditions have low complexity and the system has excess capacity, they are ill-equipped to make effective decisions in the other three quadrants. Doctors undertaking provisional and advanced training after choosing to specialise in Emergency Medicine are more comfortable in these quadrants but are still learning to appropriately match the basis of their decision making to the patient’s condition and the system’s capacity. Our model suggests ED managers should design training programs to (i) consolidate clinical expertise as a basis for rational decision making (quadrant 1); (ii) fast track experiential learning as a basis for intuitive decision making (quadrants 2 and 3); and (iii) promote reflexivity to minimise the negative impact of emotions such as anger and frustration (all quadrants) and leverage them in communicating decisions when appropriate (quadrant 4). Effective training programs are likely to include combinations of formal structured training sessions, bedside teaching, and deliberate practice (Aldeen and Gisondi 2006). Training programs which help to develop emotional intelligence of doctors are also likely to be effective in promoting better decision making in all four quadrants (Salovey and Mayer 1990, van Kleef 2014).

A second HRM implication of our model relates to the retention of experienced ED doctors in the public hospital system. Over time, the “grind” of making decisions within the capacity constraints of quadrants 2 and 4 can undermine the professional satisfaction of ED doctors and cause them to question the meaning of their work. The outcome may be that some highly experienced doctors leave or reduce their hours of employment in the public hospital system to take up work in the private system. Negotiations between the ED and admitting departments in private hospitals are prompt and unproblematic because the parties do not have to compete for scarce bed resources (AIHW 2012).
data suggests that managers of public hospitals may improve their retention of senior ED doctors if they approach ED overcrowding and access block as whole-of-hospital problems rather than as a problem which is caused by, and therefore solvable within, the ED. Adopting a whole-of-hospital perspective on interdepartmental patient flow encourages other departments to work collaboratively and creatively with the ED to diagnose complex patient cases and progress treatment plans when the hospital is operating above capacity. This collaboration is expected to reduce ED doctors’ experience of negative emotions such as anger and frustration when making decisions in quadrant 4 and may improve the retention of ED doctors in the public hospital system as a result.
### FIGURE 1: DECISION MAKING PRIORITIES BY ED DOCTORS

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<td><strong>System at or over capacity</strong></td>
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REFERENCES


