# A corpus study of the construction of evaluative stance in Introduction in Psychology and Radiology journals

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# Project

Locating, identifying and mapping the use of reporting verbs in English research articles: Cross-generic and cross-disciplinary perspectives (2016–2018)

**Winnie Cheng, Stephen Evans, & Lin Ling Kathy**

# Academic writing

- interpersonal and persuasive

- writers strategically choose potentially evaluative lexis:
  - to express (explicitly or implicitly) their attitudinal stance,
  - to convey their level of commitment towards propositions, and
  - to engage appropriately with the readers

(Gray & Biber, 2015)

# Using reporting verbs to refer to/cite prior research in research articles (Hyland, 2002, p. 115)

- "the attribution of propositional content to another source"

- "situating current work in a larger disciplinary narrative"

- Interpersonal and rhetorical objectives:
  - "rhetorically construct a community consensus" and
  - "ensure that criticism stays within accepted bounds"

# Terminology: ‘writer’ and ‘author’

**Writer:** the one who writes the journal article

Original article

Diffusion weighted MRI of osteoid osteomas: Higher ADC values after radiofrequency ablation

S. Rheinheimer*, J. Görlach, J. Figiel, A.H. Mahnken

*Philipps University of Marburg, Diagnostic and Interventional Radiology, Baldingerstraße 35043 Marburg, Germany*

**Author:** the one who is cited in the article by the writer

In general, research in this area has been limited to cross-sectional data, so temporal precedence cannot be established (Duangdao & Roesch, 2008). Therefore, it is unclear whether (a) coping strategies affect mental health, (b) mental health affects

# Terminology: “integral citations” and “non-integral citations”

**Integral citation:** The name of the cited author in the citing sentence; e.g.,

- In 2011, Haneder et al. evaluated flow-dependent NE-MRA of the calf station at 3.0 T in a cohort of 36 patients with PAOD [19].
- Weems (2008) proposed a developmental model of anxiety that incorporates AS.

**Non-integral citation:** The cited author in parentheses, or by superscript numbers, as defined by the convention of the journal; e.g.,

- They found task performance was better with concurrent cognitive load than performance without such load (Mikels et al., 2008).
- More recently, dual-energy CT has been proposed for this purpose.[10-13]

# Hyland (2002)

## Corpus data

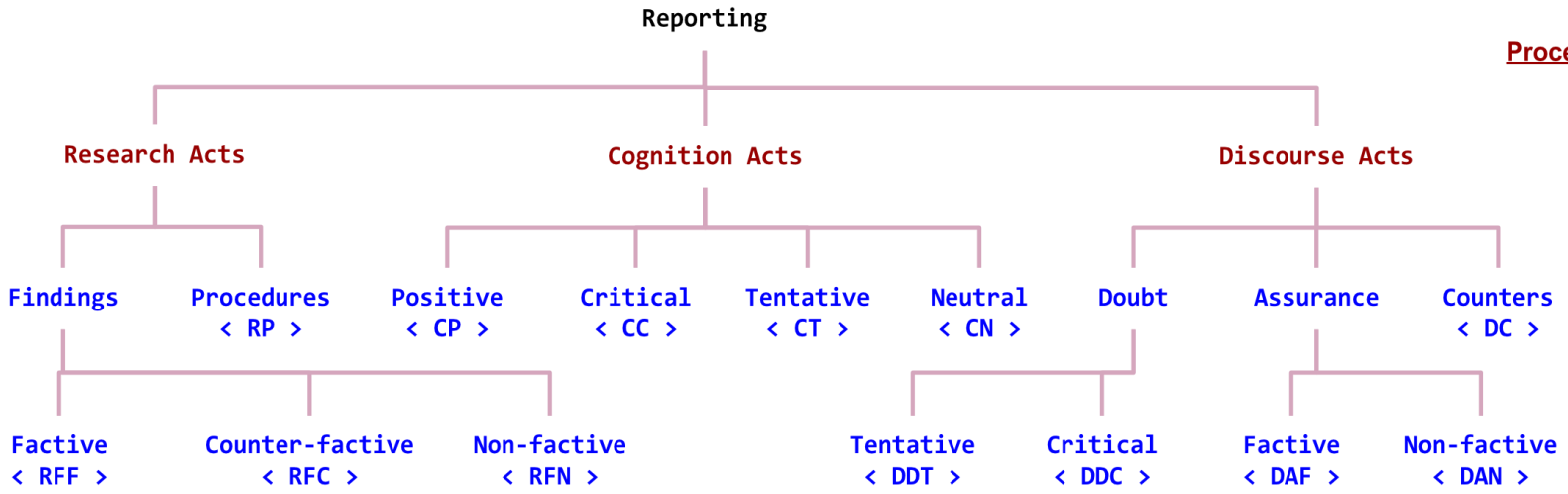
10 leading journals in 8 disciplines, 80 research articles

## Findings

- 2,287 reporting verbs (RVs)
- 1/220 words of text

Hyland, K. (2002). Activity and evaluation: reporting practices in academic writing. In J. Flowerdew (Ed.), *Academic discourse* (pp. 115-130). Harlow: Pearson Education Limited.

# Hyland (2002): Categories and (process and evaluative) functions of reporting verbs

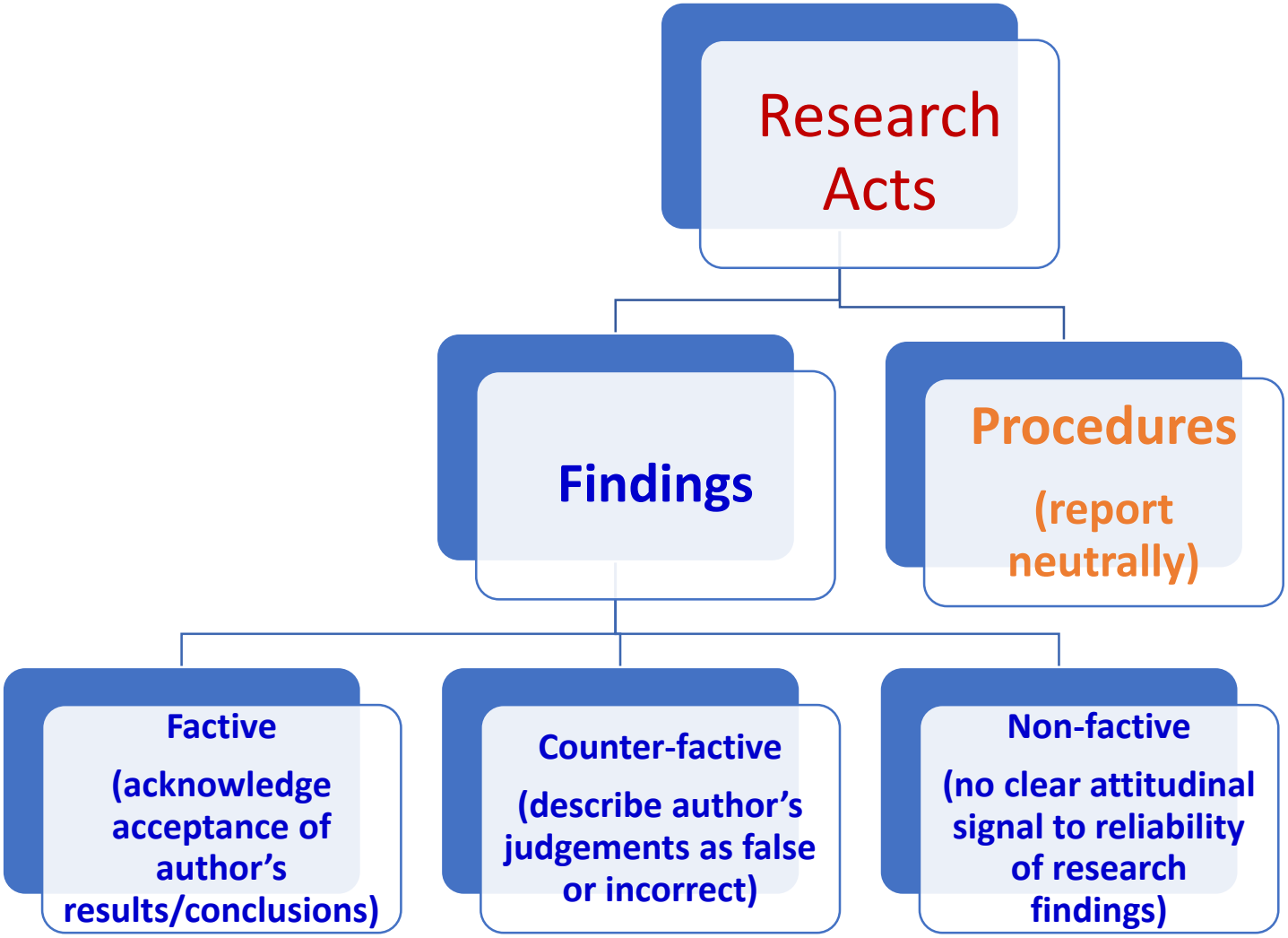



Ken Hyland (2002) fig. 6.1 Categories of reporting verbs

# Process functions: Three types of activity and evaluation (Hyland, 2002, p. 119)

| Research (Real-World) Acts | Cognition Acts | Discourse Acts |
|---|---|---|
| **Verbs that represent experimental activities or actions carried out**: **In statements of findings**; e.g., *observe, discover, notice, show* **In procedures**; e.g., *analyse, calculate, assay, explore, plot recover* | **Verbs about the cited author's mental process**; e.g., *believe, conceptualise, suspect, assume, view* | **Verbs that involve linguistic activities and focus on the verbal expression of cognitive or research activities**; e.g., *ascribe, discuss, hypothesise, report, state* |

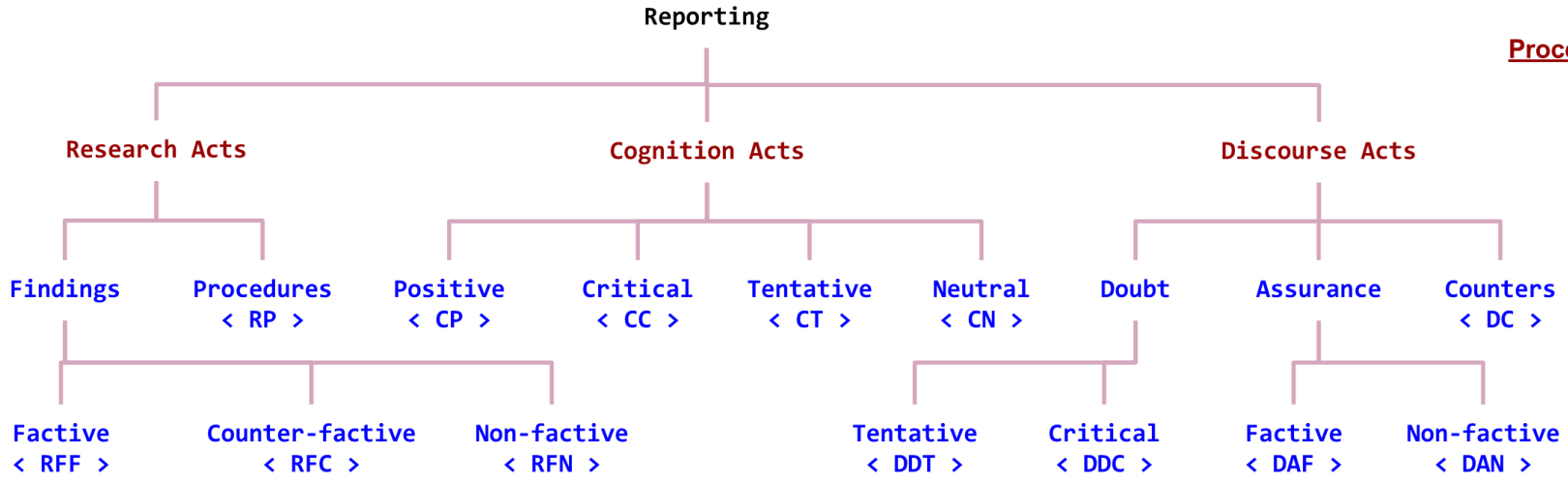
# Process functions, evaluative functions: Research Acts (p. 119) (1/2)



# Process functions, evaluative functions: Research Acts (p. 119) (2/2)

| Findings: Factive verbs | Findings: Counter-factive verbs | Findings: Non-factive verbs | Procedure verbs |
|---|---|---|---|
| **Writer acknowledges acceptance of author's results/ conclusions** | **Writer describes author's judgements as false or incorrect** | **No clear attitudinal signal to reliability of research findings** | **Report neutrally** |
| *demonstrate*<br>*establish*<br>*show*<br>*solve*<br>*confirm* | *fail*<br>*misunderstand*<br>*ignore*<br>*overlook* | *find*<br>*identify*<br>*observe*<br>*obtain* | *reviewed*<br>*analysed*<br>*compared*<br>*replicated*<br>*investigated*<br>*studied* |

# Hyland's (2002): Categories and (process and evaluative) functions of reporting verbs



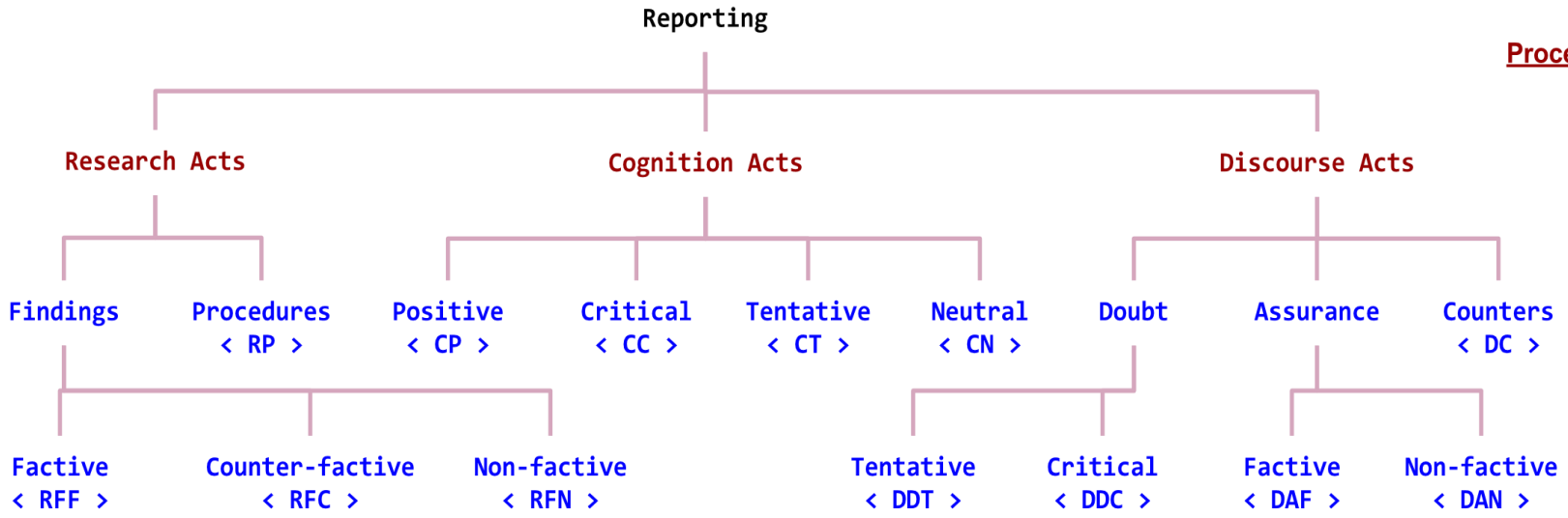

Ken Hyland (2002) fig. 6.1 Categories of reporting verbs

**Cognition Acts**: Verbs about the cited author's mental process

# Process functions, evaluative functions: Cognition Acts (p. 120)

| Positive | Critical | Tentative | Neutral |
|---|---|---|---|
| **Writer represents author as having a positive attitude towards the proposition (reported matter), accepting it as true or correct** | **Writer represents author as taking a critical stance towards the proposition** | **Writer represents author as having a tentative view towards the proposition** | **Writer represents author as holding a neutral attitude the proposition** |
| *agree*<br>*concur*<br>*hold*<br>*know*<br>*think*<br>*understand* | *disagree*<br>*dispute*<br>*not think* | *believe*<br>*doubt*<br>*speculate*<br>*suppose*<br>*suspect* | *picture*<br>*conceive*<br>*anticipate*<br>*reflect* |

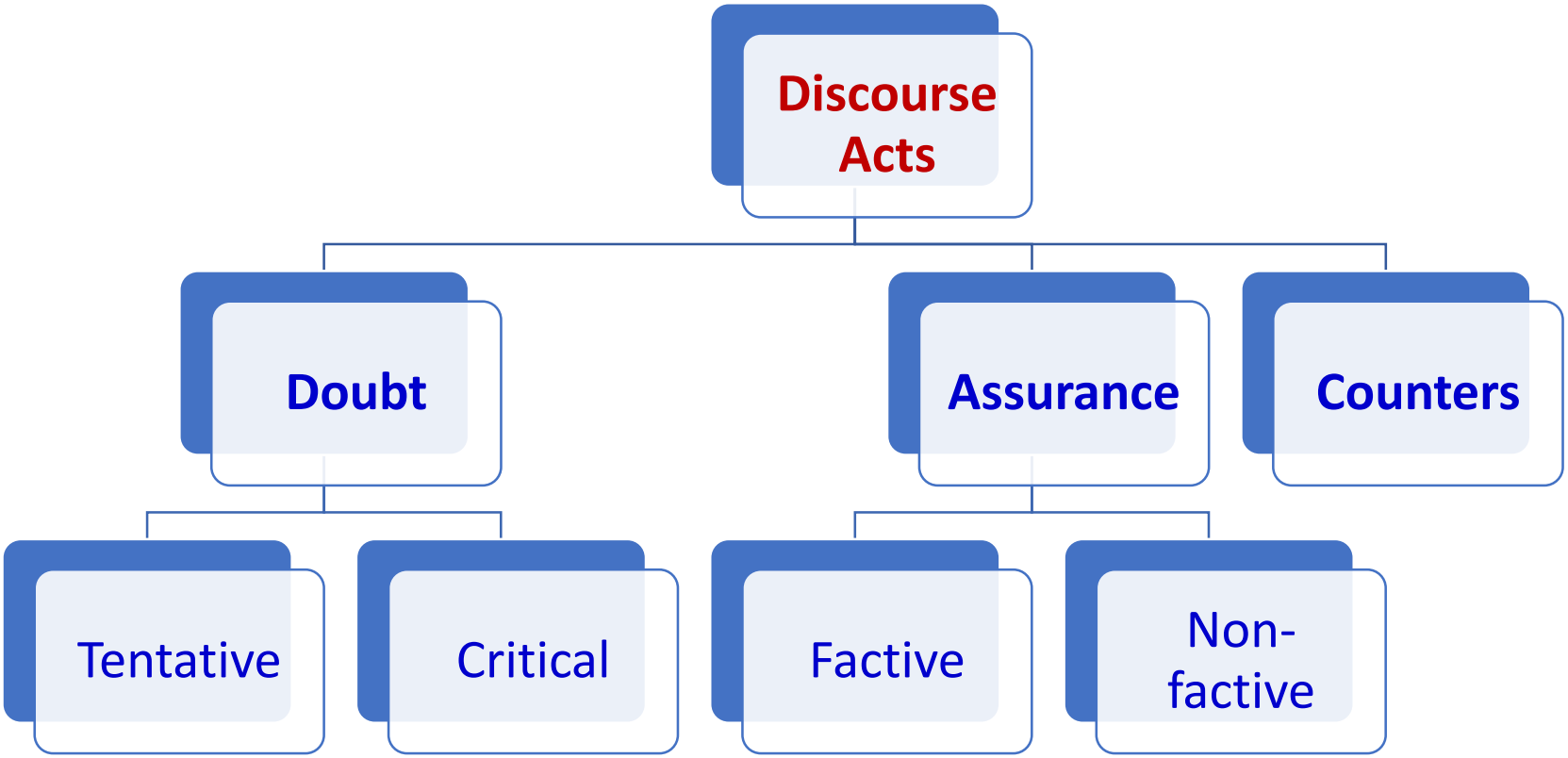
# Hyland's (2002): Categories and (process and evaluative) functions of reporting verbs



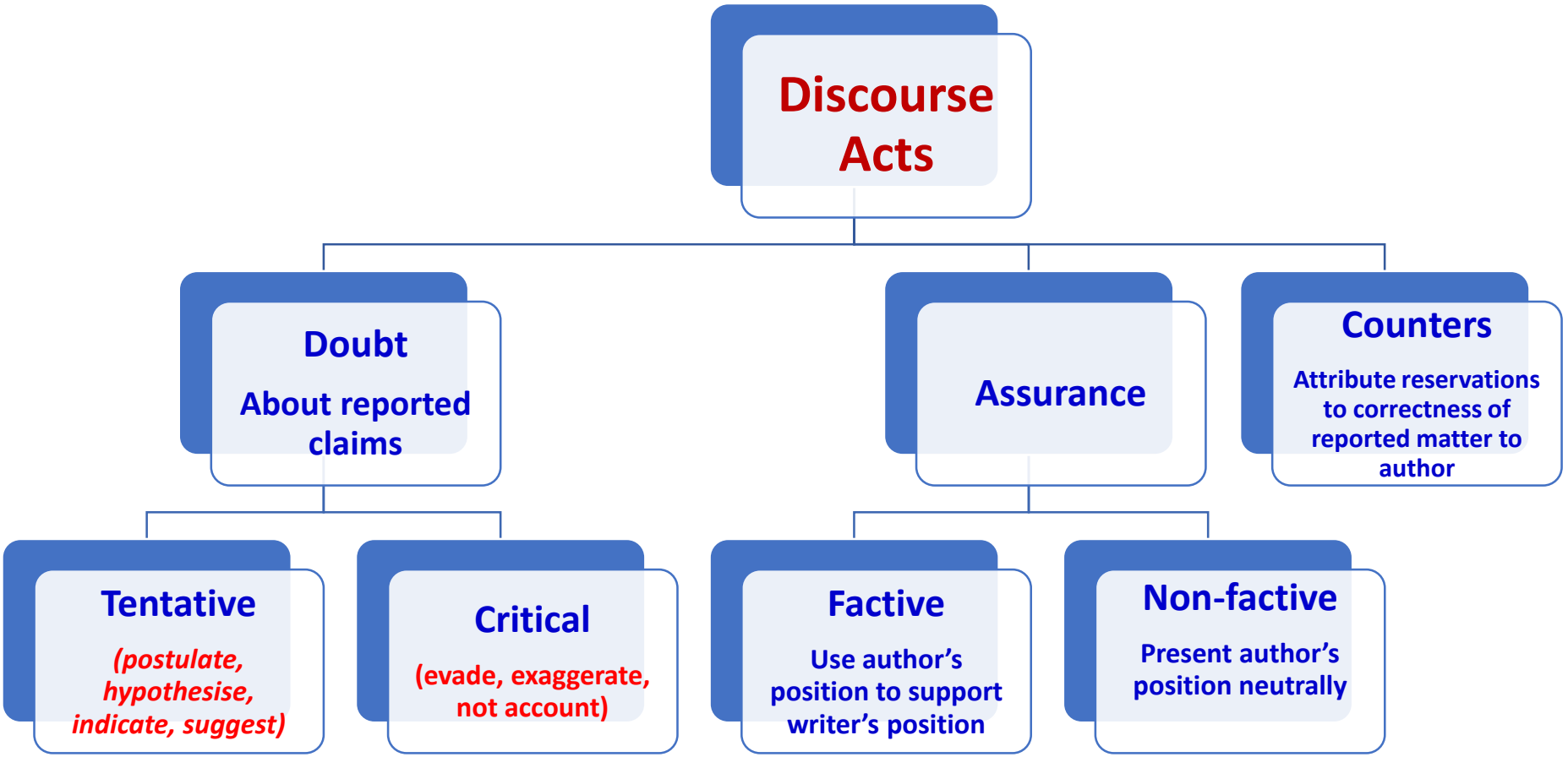

Ken Hyland (2002) fig. 6.1 Categories of reporting verbs

**Discourse Acts**: Verbs that involve linguistic activities and focus on the verbal expression of research activities

# Process functions: Discourse Acts: Evaluative functions (1/2)



# Process functions: Discourse Acts: Evaluative functions (2/2)



# A corpus study of the construction of evaluative stance in Introduction in Psychology and Radiology journals

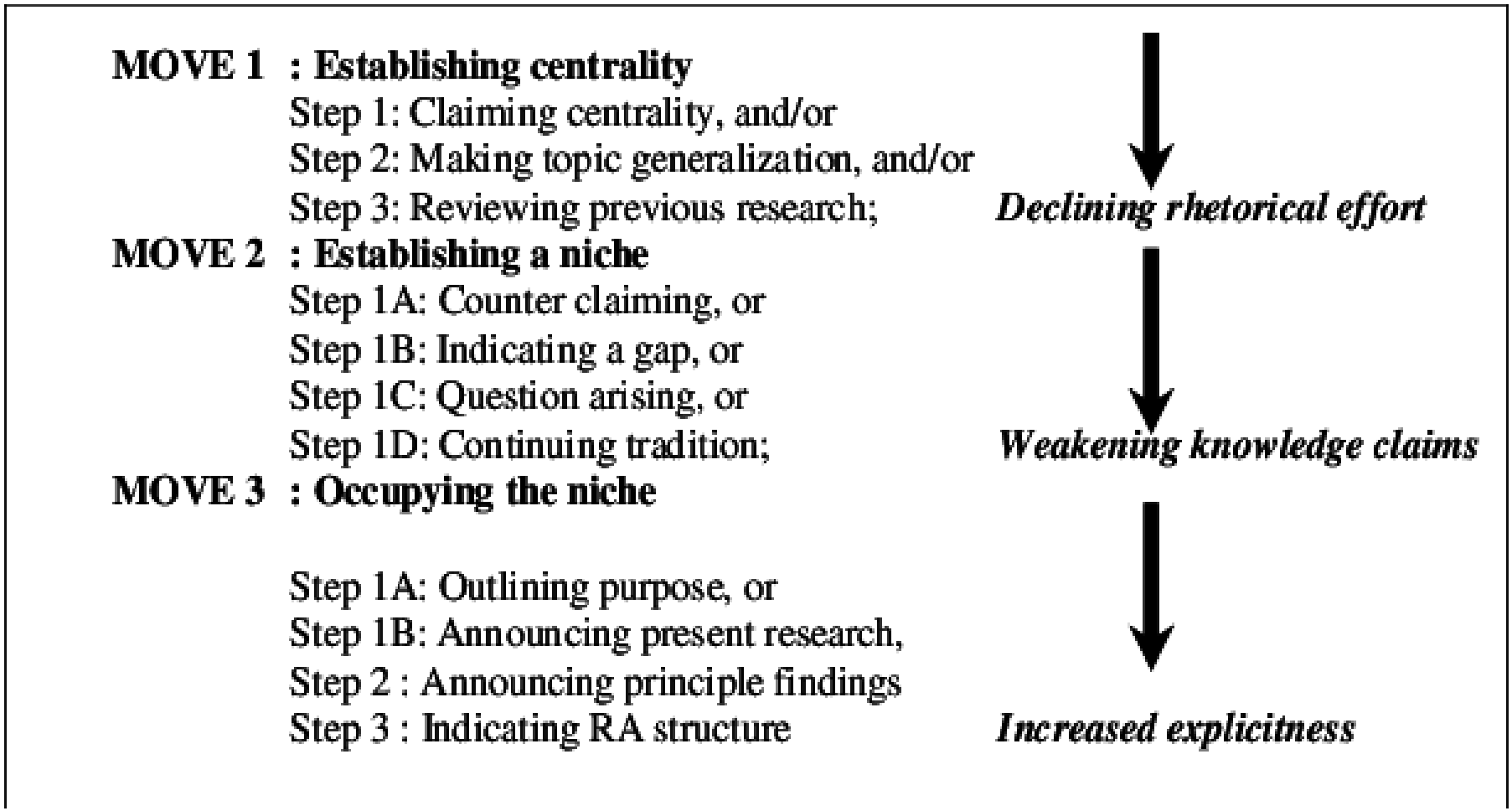
## Introduction

# Aim of this study

To compare in what ways, and to what extent, **writers** from different disciplines use RVs, across moves in research article introductions:

- To report on process functions
- To take a stance towards the reported claims (both **the author**'s academic activities and **the writer**'s evaluative judgements)

# "Create a Research Space" (CARS) model of research introductions (Swales & Feak, 2004)



# Data

Sixteen journals from two scopes in Journal Citation Index 2015 found to have a dominant "**Introduction**-Method-Results-Discussion" (**I**MRD) structure (Lin, 2013)

- Psychology
- Radiology, Nuclear Medicine & Medical Imaging (Radiology)

128 articles with the distinct **I**MRD structure, excluding such variants as ILMRD and IM[RD]C

# Procedure of study (1/2)

1. Downloaded 128 IMRD articles from leading high impact factor journals in Psychology and Radiology, Nuclear Medicine and Medical Imaging in Journal Citation Reports (JCR) 2015.

2. Extracted the Introduction sections and converted them into individual text files.

3. Identified clauses with integral and non-integral citations, and clauses that refer to those cited authors.

# Procedure of study (2/2)

4. Corpus text files opened in Notepad++, examined by means of user-defined scripts

5. Custom-made program developed to extract RV-specific and move-specific concordances (instances of RVs)

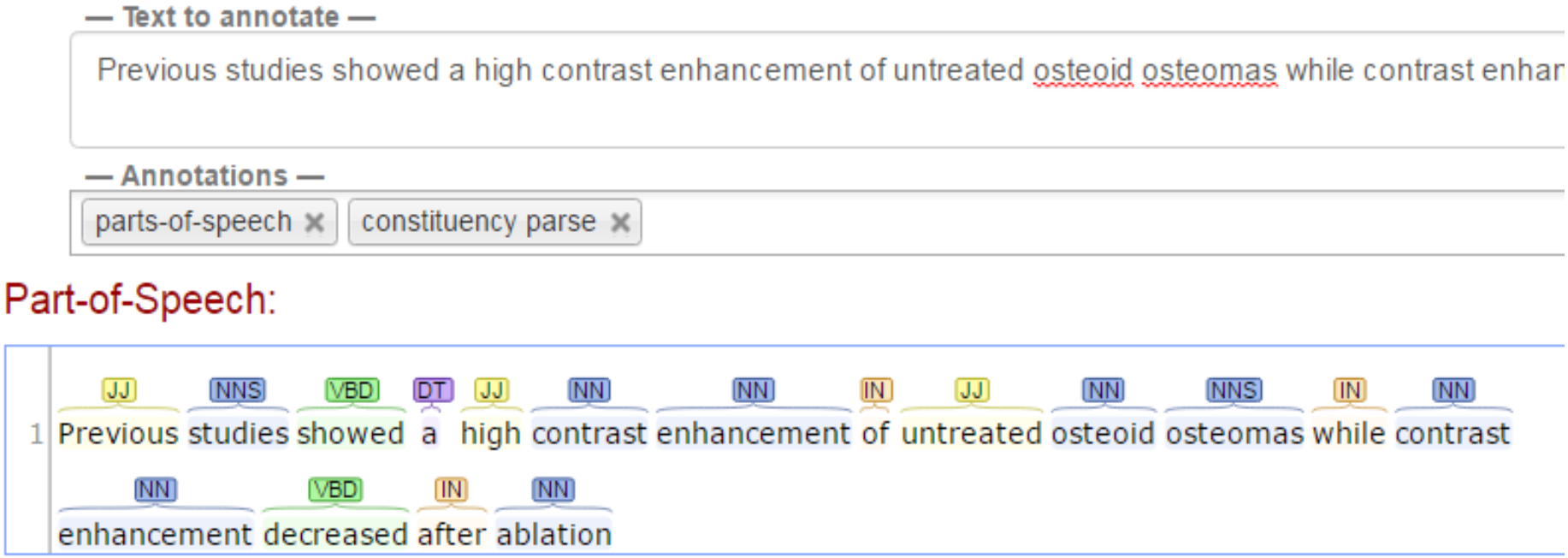
6. spaCy Word Lemmatizer to find the lemma of RV, to group process and evaluative RVs based on lemmas and to create frequency summaries

# Glossary

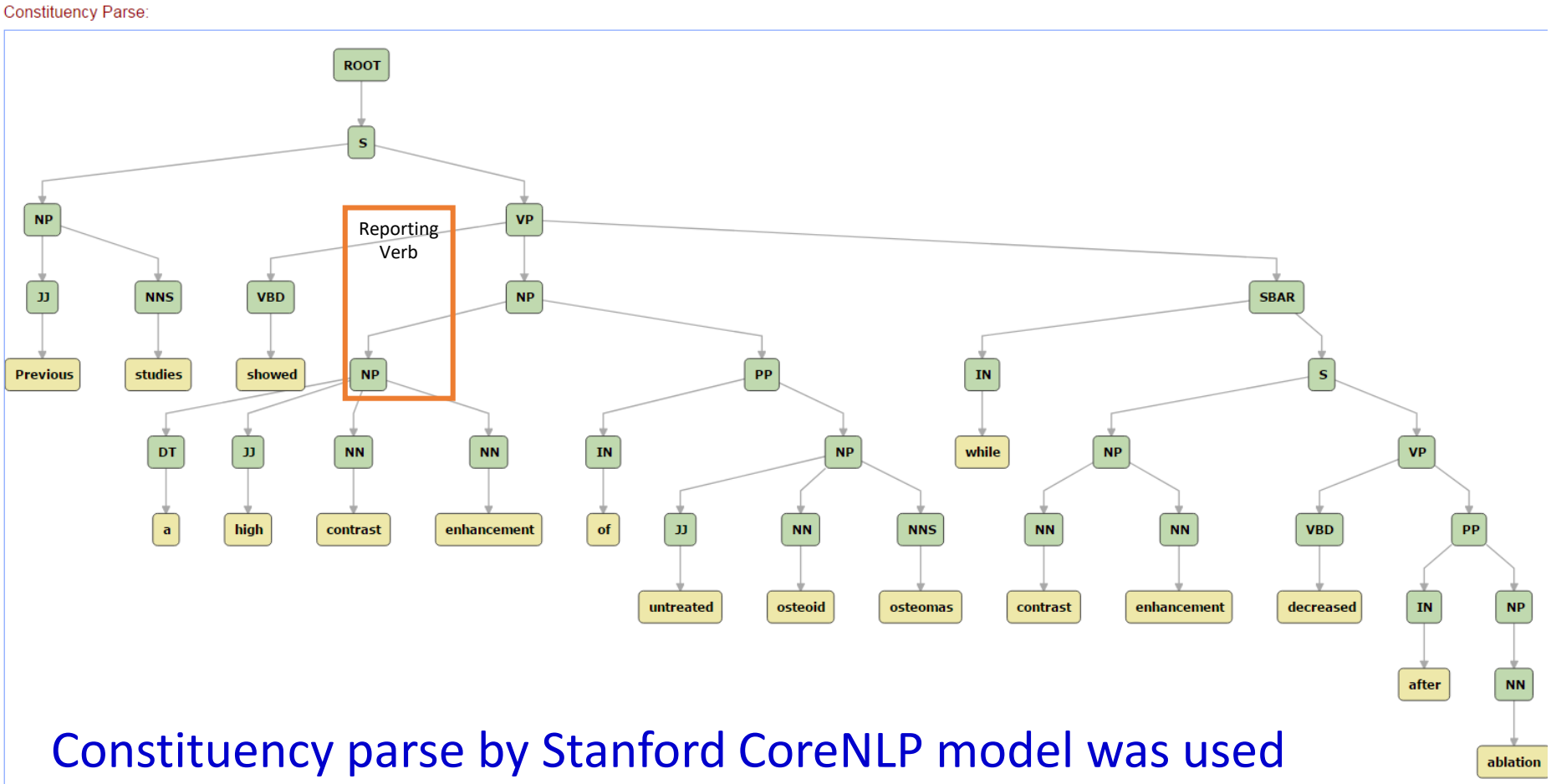
| Codes | Description | Codes | Description |
|---|---|---|---|
| Swale's (1990) CARS model | | Hyland's (2002) categories of reporting verbs | |
| <m1>…</m1> | Move 1 (CARS model) | <rff> | Research acts → Findings → Factive |
| <m2>…</m2> | Move 2 (CARS model) | <rfc> | Research acts → Findings → Counter-factive |
| <m3>…</m3> | Move 3 (CARS model) | <rfn> | Research acts → Findings → Non-factive |
| | | <rp> | Research acts → Procedures |
| RV | Reporting verbs | <cp> | Cognition acts → Positive |
| POS | Part of speech | <cc> | Cognition acts → Critical |
| | | <ct> | Cognition acts → Tentative |
| | | <cn> | Cognition acts → Neutral |
| | | <ddt> | Discourse acts → Doubt → Tentative |
| | | <ddc> | Discourse acts → Doubt → Critical |
| | | <dc> | Discourse acts → Counters |
| | | <daf> | Discourse acts → Assurance → Factive |
| | | <dan> | Discourse acts → Assurance → Non-factive |

# Software

- Text editor for tagging different RVs → Notepad++ v.7.3.3
- Part of speech and constituency analysis → Stanford CoreNLP v.3.8.0
- Lemmatisation → spaCy Word Lemmatizer



# Stanford CoreNLP constituency parse




Constituency parse by Stanford CoreNLP model was used to assist the researcher to identify the reporting verb in complex sentences.

# Journal article introduction corpora

| No. of words | Psychology | Radiology |
|---|---|---|
| Total | 79,066 | 23,803 |
| **Move 1** | 48,377 (61.19%) | 15,823 (66.47%) |
| **Move 2** | 11,906 (15.06%) | 4,720 (19.83%) |
| **Move 3** | 17,390 (21.99%) | 3,124 (13.12%) |

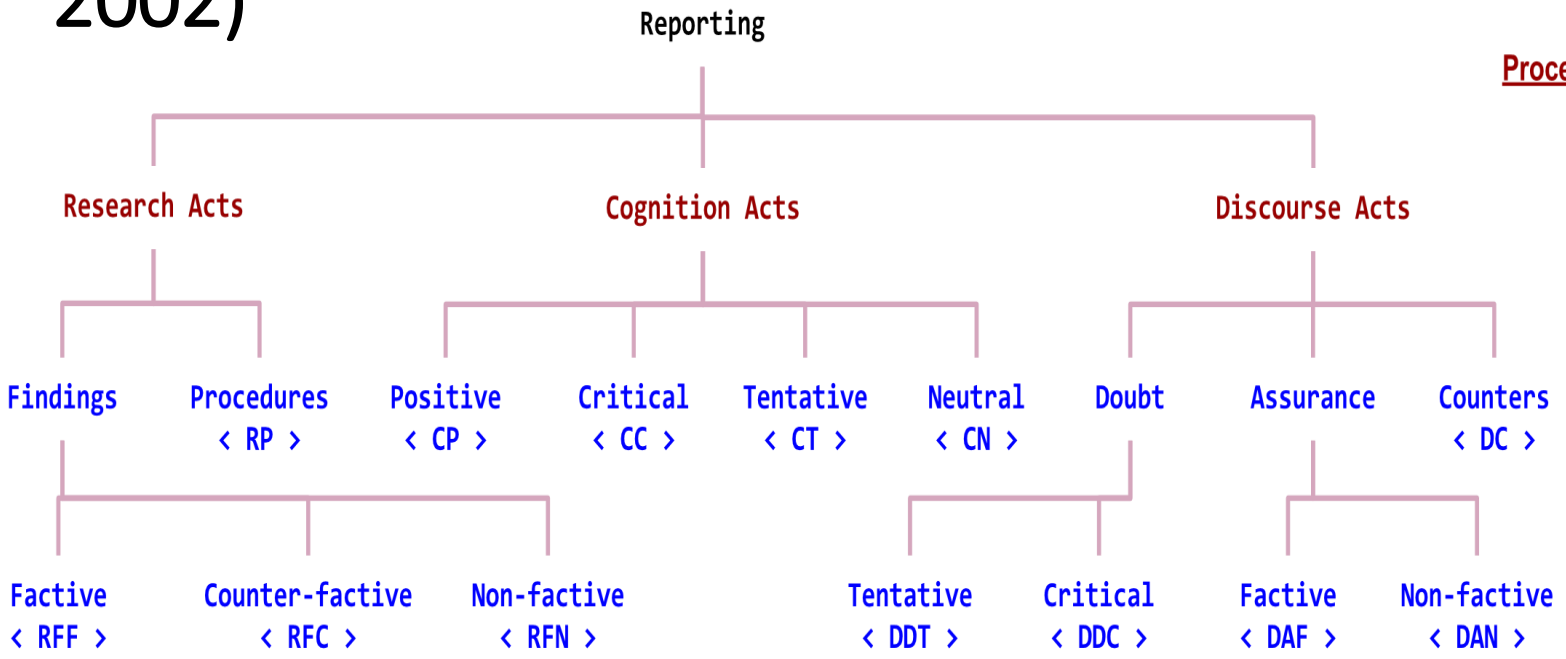
"Create a Research Space" (CARS) model of research introductions (Swales & Feak, 2004)

**Move 1 Establishing centrality**

**Move 2 Establishing a niche**

**Move 3 Occupying a niche**

# Model of functions of reporting verbs (Hyland, 2002)




Ken Hyland (2002) fig. 6.1 Categories of reporting verbs

Identified top 10 frequent reporting verbs in different **process functions**.

# Frequencies of process function RVs

| Process function RVs | Psychology | | Radiology | |
|---|---|---|---|---|
| | per 1000 words | % | per 1000 words | % |
| Research Acts | 6.197 | 57.80% | 6.764 | 59.74% |
| Cognition Acts | 1.492 | 13.95% | 0.672 | 12.32% |
| Discourse Acts | 3.023 | 28.25% | 2.731 | 27.94% |

- Overall, Research Acts >> Discourse Acts > Cognition Acts
- **Radiology: research acts** (59.74% vs. 57.80%) slightly more frequent
- **Psychology: cognition acts** (13.95% vs. 12.32%) and **discourse acts** (28.25% vs. 27.94%) slightly more frequent

# Top 10 reporting verbs in all process functions

| | Psychology | % | | Radiology | % |
|---|---|---|---|---|---|
| 1 | [RFN] find | 12.175% | | [RFN] find | 11.121% |
| 2 | [DDT] suggest | 10.402% | | [RFF] show | 10.662% |
| 3 | [RFF] show | 10.402% | | [DDT] suggest | 8.915% |
| 4 | [RP] examine | 4.965% | | [DAN] report | 5.239% |
| 5 | [RFF] demonstrate | 4.019% | | [RFF] demonstrate | 4.412% |
| 6 | [DAN] report | 3.664% | | [RP] use | 4.136% |
| 7 | [RP] use | 3.310% | | [RP] examine | 3.860% |
| 8 | [RP] compare | 3.191% | | [RP] compare | 3.401% |
| 9 | [DDT] indicate | 3.073% | | [DDT] propose | 2.757% |
| 10 | [CN] focus | 2.482% | | [DDT] indicate | 2.482% |

- 9/10 frequent RVs in Psychology and Radiology are the same
- Unique RVs: 'focus' in Psychology and 'propose' in Radiology

# Process functions in Introduction: Research Act RVs

| | | |
|---|---|---|
| Findings | **Counter-factive (false/incorrect) (Type no.=3)** | *failed, lacked, suffered* |
| | **Factive (acknowledge acceptance) (Type no.=12)** | *addressed, completed, confirmed, demonstrated, discovered, established, implemented, offered, proved, showed, tied, underscored* |
| | **Non-factive (no clear signal) (Type no.=4)** | *developed, found, identified, resulted* |
| **Procedures (Type no.=60)** | | *acquired, adjusted, administered, adopted, analyze, applied, asked, assessed, assigned, based, captured, classified, compared, conducted, consisted, correlated, defined, designed, detected, diagnose, directed, distinguished, documented, employed, engineered, evaluated, evolved, examined, explored, extended, followed, identify, included, instructed, investigated, involved, made, manipulated, mapped, measured, observed, obtained, performed, published, randomized, relied, render, replicated, required, restricted, revised, specify, studied, targeted, taught, tested, treated, used, validated, verified* |

# Discipline-specific top 10 Research Act RVs

| | Psychology | % | | Radiology | % |
|---|---|---|---|---|---|
| 1 | [RFN] find | 12.175% | ↔ | [RFN] find | 11.121% |
| 2 | [RFF] show | 10.402% | ↔ | [RFF] show | 10.662% |
| 3 | [RP] examine | 4.965% | ↘ | [RFF] demonstrate | 4.412% |
| 4 | [RFF] demonstrate | 4.019% | ↗ | [RP] use | 4.136% |
| 5 | [RP] use | 3.310% | ↘ | [RP] examine | 3.860% |
| 6 | [RP] compare | 3.191% | ↔ | [RP] compare | 3.401% |
| 7 | [RP] observe | 1.182% | ↗ | [RP] investigate | 1.563% |
| 8 | [RP] conduct | 1.182% | ↘ | [RFN] develop | 1.379% |
| 9 | [RP] investigate | 1.064% | ↗ | [RP] observe | 1.287% |
| 10 | [RFN] develop | 1.064% | ↘ | [RP] conduct | 1.195% |

- Same ten **Research Act** RVs
- ‘find’ and ‘show’: 22+%

# Concordances of Research Act RVs

Research acts, findings, factive

Empowerment Model (TREM; Harris, 1998). In general, these treatments <rff>**show**<rv/><rff/> positive outcomes in improving patients' PTSD symptoms and/or other sym
ve are confident we can). // An exception is Keer et al. (2014), who <rff>**show**<rv/><rff/> that the moderating effect of basing intentions on affective attitude w
are important to investigate and understand. Classical twin studies <rff>**show**<rv/><rff/> that two thirds of the variability in BMI is attributable to genetic fa
ation in BMI within families and across generations; indeed, studies <rff>**show**<rv/><rff/> that while the rearing environment has little influence on BMI in adult
verbal memory (Browne Rego & Bryant, 1993). A smaller set of studies <rff>**show**<rv/><rff/> that the relation between syntactic awareness and reading comprehension

Research acts, findings, counter-factive

male gender: Schilling & Sachs, 1993), whereas other studies have <rfc>**failed**<rv/><rfc/> to identify significant demographic predictors (e.g., age: Ray, Hutchis
point in time. More recent cross-sectional studies have generally <rfc>**failed**<rv/><rfc/> to detect superior outcomes for more experienced clinicians relative to
s (Bagby et al., 2008; Quilty et al., 2008a); however, others have <rfc>**failed**<rv/><rfc/> to replicate these effects (Bagby et al., 2008; Du et al., 2002; Peters
task (rather than a latent variable) to serve as a mediator and/or <rfc>**failed**<rv/><rfc/> to establish the construct validity of the WM components under study. F

Research acts, findings, non-factive

rding long-term effects (up to four months); Linetzky et al. (2015) <rfn>**found**<rv/><rfn/> some small effects, while effects were non-significant in Heeren et al
ion in adolescents with heightened social- or test-anxiety symptoms <rfn>**found**<rv/><rfn/> no long-term effects on anxiety (Sportel, de Hullu, de Jong, & Nauta,
bias is the hypothesized mediating process, and some studies indeed <rfn>**found**<rv/><rfn/> such a mediational role of attentional bias (Dennis and O'Toole, 2014;
s and Beevers, 2010). However, no significant mediation effects were <rfn>**found**<rv/><rfn/> in a recent meta-analysis (Mogoase et al., 2014). It has also been <dc
r et al., 2005) and are comparable to or higher than lifetime rates <rfn>**found**<rv/><rfn/> in individuals with combat exposure ( Richardson, Frueh, & Acierno, 20

Research acts, Procedure

A studies <rp>included<rv/><rp/> in Cristea, Mogoase, et al. (2015) <rp>**used**<rv/><rp/> the dot-probe training and (sub-)clinical samples, so more research is ne
ve (Lu et al., 2009; Mueser et al., 2007 ; Rosenberg et al., 2004) <rp>**used**<rv/><rp/> a similar cognitive behavioral intervention and likewise yielded statisti
Howell, & Wood, 2005; Jacob, Koenig, Howell, Wood, & Haber, 2009), <rp>**used**<rv/><rp/> growth mixture modeling (GMM) to map latent trajectory class membership f
erizations. However, the primary limitation of this work is that it <rp>**used**<rv/><rp/> entirely retrospective data, basing results on the memories of alcohol de
this. Growth mixture modeling (GMM) and cluster analysis have been <rp>**used**<rv/><rp/> to <rp>examine<rv/><rp/> trajectories of anxiety and depression symptoms
adolescent children (e.g., Weems et al., 2002). Weems et al. (2002) <rp>**used**<rv/><rp/> cluster analysis to <rp>examine<rv/><rp/> the trajectory of AS over 4 yea
= 0.9). For the cluster analytic approach that Weems et al. (2002) <rp>**used**<rv/><rp/>, the number of classes is <ct>hypothesized<rv/><ct/> a priori, because th

# Process functions: Cognition Act RVs

| | |
|---|---|
| Critical (N=3) | *neglected, thought, underestimate* |
| Neutral (N=9) | *considered, correlated, focused, interested, interpreted, linked, paid, posited, viewed* |
| Positive (N=13) | *agree, aimed, associated, attributed, contends, devised, implicated, initiated, judged, known, noted, reasoned, seen* |
| Tentative (N=6) | *appear, assumed, believed, hypothesized, predicted, tended* |

# Discipline-specific top 10 Cognition Act RVs

| | Psychology | % | | Radiology | % |
|---|---|---|---|---|---|
| 1 | [CN] focus | 2.482% | | [CN] focus | 2.206% |
| 2 | [CP] associate | 2.009% | | [CP] associate | 1.838% |
| 3 | [CN] link | 1.537% | | [CN] link | 1.195% |
| 4 | [CC] think | 0.709% | | [CN] consider | 0.735% |
| 5 | [CP] note | 0.709% | | [CC] think | 0.643% |
| 6 | [CT] predict | 0.709% | | [CP] note | 0.643% |
| 7 | [CN] consider | 0.591% | | [CT] predict | 0.551% |
| 8 | [CT] appear | 0.591% | | [CT] appear | 0.460% |
| 9 | [CT] believe | 0.473% | | [CT] believe | 0.460% |
| 10 | [CN] posit | 0.473% | | [CN] posit | 0.368% |

Same top ten Cognition Act RVs in psychology and radiology

# Concordances of Cognition Act RVs

Cognition Acts - Positive

yntax. Classic and current theories of reading comprehension broadly <cp>**agree**<rv/><cp/> that syntactic awareness plays a direct role in reading comprehension
s and recommendations have been <ddt>proposed<rv/><ddt/> [11-16]. All <cp>**agree**<rv/><cp/> on the major worrisome US features. None covers all features in one cl
ted to complete treatment. For instance, Resick and colleagues (2008) <cp>**aimed**<rv/><cp/> to have participants attend twice-weekly sessions for 6 weeks; however
2014). Kail and Hall (1994) and Amtmann, Abbott, and Berninger (2007) <cp>**attributed**<rv/><cp/> the RAN-reading relationship to domain-general factors such as sp
the targeted information. Inhibition processes have been consistently <cp>**attributed**<rv/><cp/> to the executive component of WM (Hofmann, Schmeichel, & Baddeley

Cognition Acts - Critical

Unfortunately, research on the efficacy of ER strategies has so far <cc>**neglected**<rv/><cc/> the moderating effects of contextual factors (Aldao, 2013 ; Coifma
ues in children's endocrine and immune systems. Relationship stress is <cc>**thought**<rv/><cc/> to modulate the hypothalamic-pituitary-adrenal axis (Flinn & England
s inflammation. Although the quality of adolescents' relationships is <cc>**thought**<rv/><cc/> to be related in meaningful ways (e.g., Elicker, Englund, & Sroufe,
nship stress and inflammatory processes. Cultural norms and values are <cc>**thought**<rv/><cc/> to shape the salience and importance of relationship qualities (Cher

Cognition Acts – Tentative

ac history (Martens et al., 2008) and diabetes (Murphy et al., 2008), <ct>**appear**<rv/><ct/> to be prominent risk factors for the persistence of depressive sympto
a given period of time - the complementary use of other ER strategies <ct>**appears**<rv/><ct/> to be a promising candidate for such a significant contextual factor
creasing group (4). Thus, the course of depressive symptoms over time <ct>**appears**<rv/><ct/> to hold prognostic information with regard to cardiac risk on top of
e depression severity. The negative effect of neuroticism on outcomes <ct>**appears**<rv/><ct/> to be stronger for cognitive-behavioral therapy (CBT) than pharmacot
s skills that are traditionally <rp>evaluated<rv/><rp/>, the one that <ct>**appears**<rv/><ct/> to be the strongest predictor of reading success is visual letter ca

Cognition Acts - Neutral

al., 2007 ; Peckham et al., 2010). Although most of this research is <cn>**focused**<rv/><cn/> on adults, research in youth <ddt>suggests<rv/><ddt/> that attention
intervention to reduce stress-reactivity, anxiety, or depression have <cn>**focused**<rv/><cn/> on adult (mostly clinical) samples, and have <daf>provided<rv/><daf/
<rp>consisted<rv/><rp/> of 22-sessions: 14 sessions of group therapy <cn>**focused**<rv/><cn/> initially on education and relaxation training and later on social s
dominantly male (88%; see also De Sanctis et al., 2008). Although not <cn>**focused**<rv/><cn/> on maltreatment per se, Biederman, Petty, Spencer, et al. (2012) <rf
elopment in progeny. The majority of human observational studies have <cn>**focused**<rv/><cn/> on DNA methylation of NR3C1 in cord blood (Hompes et al., 2013; Mull
4). However, this extensive corpus of research has almost exclusively <cn>**focused**<rv/><cn/> on information processing in reaction to positive and negative emoti
at baseline. Furthermore, the majority of research in this area has <cn>**focused**<rv/><cn/> on individuals with type 1 diabetes or has not <rp>distinguished<rv/

# Process functions: Discourse Act RVs

| | | |
|---|---|---|
| **Assurance (N=26)** | **Factive (N=16)** | *argued, called, concluded, determined, emphasized, highlighted, illustrated, introduced, pointed, provided, raised, recommended, revealed, revived, speak, supported* |
| | **Non-factive (N=10)** | *described, discussed, explain, expressed, mediating, mentioned, referred, reported, represents, states* |
| **Counter (N=1)** | | *leave open* |
| **Doubt (N=4)** | **Critical (N=1)** | *criticized* |
| | **Tentative (N=3)** | *indicated, proposed, suggest* |

**Factive**

**Use author's position to support writer's position**

**Non-factive**

**Present author's position neutrally**

# Discipline-specific top 10 Discourse Act RVs

| | Psychology | % | | Radiology | % |
|---|---|---|---|---|---|
| 1 | [DDT] suggest | 10.402% | | [DDT] suggest | 8.915% |
| 2 | [DAN] report | 3.664% | | [DAN] report | 5.239% |
| 3 | [DDT] indicate | 3.073% | | [DDT] propose | 2.757% |
| 4 | [DDT] propose | 2.482% | | [DDT] indicate | 2.482% |
| 5 | [DAF] argue | 1.300% | | [DAN] describe | 1.471% |
| 6 | [DAF] support | 1.182% | | [DAF] argue | 1.011% |
| 7 | [DAF] provide | 0.946% | | [DAF] support | 0.919% |
| 8 | [DAN] describe | 0.709% | | [DAF] provide | 0.827% |
| 9 | [DAF] point | 0.709% | | [DAF] point | 0.551% |
| 10 | [DAN] discuss | 0.591% | | [DAN] discuss | 0.551% |

- Same top ten Discourse Acts RVs in Psychology and Radiology
- ‘suggest’ used slightly more in Psychology
- ‘report’ higher occurrence in Radiology

# Concordances of Discourse Act RVs

Discourse acts – Doubt - tentative

we do not specifically recommend it. // Oral rehydration was recently <ddt>**proposed**<rv/><ddt/> as an alternative to IV hydration in dehydrated patients [22, 23]
and Data System (TIRADS) classifications and recommendations have been <ddt>**proposed**<rv/><ddt/> [11-16]. All <cp>agree<rv/><cp/> on the major worrisome US featu
// Whilst several approaches have been <ddt>**proposed**<rv/><ddt/> such as measurement of mean MRI signal amplitude,[23] and taggin
patients with suspected PE.[8] More recently, dual-energy CT has been <ddt>**proposed**<rv/><ddt/> for this purpose.[10-13] Both methods have the drawback that the

Discourse acts – Doubt - Critical

tress. // However, the measure of distress used in this study has been <ddc>**criticized**<rv/><ddc/> for not adequately capturing all aspects of diabetes-related dis
hange in this general conclusion. Trautwein and Koller (2003) severely <ddc>**criticized**<rv/><ddc/> large parts of the previous research on this topic and laid the

Discourse acts – Assurance - Factive

in treatment process and outcome. Specifically, DeRubeis et al. (2014) <daf>**argue**<rv/><daf/> that observed treatment effects may be relative to the client sampl
s to be a major problem (Castonguay, Locke, & Hayes, 2011). Researchers <daf>**argue**<rv/><daf/> that research has minimal impact on clinical practice (Barlow, 1981
a characteristic of human life (Emmons, 1986). Recently, theorists have <daf>**argued**<rv/><daf/> in favor of a motivational approach which considers pain and suffe
nd, Shankman, Tenke, Bruder, & Klein, 2006). Additionally, it has been <daf>**argued**<rv/><daf/> that the positive effects of self-compassion are less strongly aff
on of change-focused strategies such as CR. However, as it can also be <daf>**argued**<rv/><daf/> that enhancing acceptance may reduce the motivation to work for ch

Discourse acts – Assurance – Non-factive

es of peak problems mapped well onto subtypes of alcoholism previously <dan>**described**<rv/><dan/> in the literature (Zucker, 1994, 2006). Precursive predictors of
ecific expression). In addition, the development of anxious emotion is <dan>**described**<rv/><dan/> through a pattern of ordered complexity (Robertson & Combs, 1995
orking memory is subsequently loaded. Van Dillen and Koole (2007) have <dan>**described**<rv/><dan/> this effect as the distraction hypothesis: the idea that loading
ou et al., 2009; Swanson & Kim, 2007). Finally, Norton and Wolf (2012) <dan>**described**<rv/><dan/> RAN as a microcosm of the later developing reading system, tappi

Discourse acts – Counters

rade inflammation (e.g., Dixon et al., 2009; Fuligni et al., 2009) also <dc>**leave open**<rv/><dc/> the question of what underlying processes are taking place in th

# Summary of main findings: Three process functions in Psychology and Radiology journal article introductions

- Relative frequencies of RVs: Research Acts (59.8%) > Discourse Acts (27.9%) > Cognition Acts (12.3%)

(c.f. Hyland (2002): 10 leading journals in 8 disciplines, 80 research articles: Discourse Acts (57%) > Research Acts (35%) > Cognition Acts (8%))

- Frequencies and types: Similar choice of evaluative lexis: reporting verbs

Comparison of move-specific process function RVs

Move 1 Establishing centrality

Move 2 Establishing a niche

Move 3 Occupying a niche

# Comparison of move-specific process function RVs

* per 1,000 words

| Moves / Acts | Psychology | | | Radiology | | |
|---|---|---|---|---|---|---|
| | Move 1 | Move 2 | Move 3 | Move 1 | Move 2 | Move 3 |
| Research | 8.062 | 6.719 | 1.150 | 7.837 | 7.627 | 0.320 |
| Cognition | 1.922 | 1.344 | 0.518 | 0.822 | 0.424 | 0.320 |
| Discourse | 3.989 | 2.436 | 0.978 | 2.907 | 3.814 | 0.320 |
| | R>D>C | R>D>C | R>D>C | R>D>C | R>D>C | R=D=C |

| | Psychology | Radiology |
|---|---|---|
| Move 1 | 79.8% | 75.6% |
| Move 2 | 14.8% | 23.1% |
| Move 3 | 5.4% | 1.3% |

**Overall:**

**Move 1 >>> Move 2 > Move 3**

# Frequencies of RVs: Process and evaluative functions

* per 1,000 words

| Functions | | | Psychology | | | Radiology | | | Combined | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Move 1 | Move 2 | Move 3 | Move 1 | Move 2 | Move 3 | Move 1 | Move 2 | Move 3 |
| Research Acts | Findings | Counter-factive | 0.062 | 0.084 | | 0.063 | 0.424 | | 0.062 | 0.180 | |
| | | Factive | 2.253 | 1.932 | 0.575 | 2.591 | 2.542 | 0.320 | 2.336 | 2.105 | 0.536 |
| | | Non-factive | 2.067 | 1.428 | 0.288 | 1.327 | 0.847 | | 1.885 | 1.263 | 0.244 |
| | Procedure | | 3.679 | 3.276 | 0.288 | 3.855 | 3.814 | | 3.723 | 3.428 | 0.244 |
| Cognition Acts | Critical | | 0.083 | 0.168 | 0.115 | 0.063 | | | 0.078 | 0.120 | 0.097 |
| | Neutral | | 0.765 | 0.756 | 0.173 | 0.379 | 0.212 | | 0.670 | 0.601 | 0.146 |
| | Positive | | 0.620 | 0.252 | 0.230 | 0.379 | 0.000 | 0.320 | 0.561 | 0.180 | 0.244 |
| | Tentative | | 0.455 | 0.168 | | | 0.212 | | 0.343 | 0.180 | |
| Discourse Acts | Assurance | Factive | 0.930 | 0.336 | 0.345 | 0.316 | 0.212 | | 0.779 | 0.301 | 0.292 |
| | | Non-factive | 0.827 | 0.336 | 0.115 | 1.643 | 2.966 | | 1.028 | 1.083 | 0.097 |
| | Counters | | | 0.084 | | | | | | 0.060 | |
| | Doubt | Critical | 0.021 | | 0.058 | | | | 0.016 | | 0.049 |
| | | Tentative | 2.212 | 1.680 | 0.460 | 0.948 | 0.636 | 0.320 | 1.900 | 1.383 | 0.439 |

# Main findings: Psychology (vs. Radiology) journal article introductions (1/2)

- Psychology: A greater variety of RVs across all evaluative functions under all three process functions

- Psychology: The use of RVs for a greater number of evaluative functions, except:
  - Research Acts: Findings: Counter-factive in Move 3
  - Cognition Acts: Tentative in Move 3
  - Discourse Acts: Counters in Move 1 and Move 3
  - Discourse Acts: Doubt: Critical in Move 2

# Main findings: Psychology (vs. Radiology) journal article introductions (2/2)

Psychology: A higher frequency of RVs in all moves, except:

- Cognition Acts: Tentative in Move 2
- Cognition Acts: Positive in Move 3

# Main findings: Radiology

- Writer more frequently attribute an attitude to author, using:
  - Cognition Acts: Tentative in Move 2 Establishing a niche
  - Cognition Acts: Positive in Move 3 Occupying a niche
- Overall, an absence of use of RVs in Move 3
- An absence of use of RVs in:
  - Discourse Acts: Counters
  - Discourse Acts: Doubt: Critical

Discourse Acts: Verbs that involve linguistic activities and focus on the verbal expression of cognitive or research activities

# Conclusion and future research

- How do Radiology journal articles perform the communicative function of occupying a niche? In which sections?
- To conduct concordance analysis of RVs to examine individual process functions and evaluative functions.
- To examine collocational and colligational patterns of RVs
- To compare RV usage:
  - at the CARS model step level
  - in other sections (e.g., Method, Result, Discussion) in research articles
  - in different sections in review articles and theoretical articles

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# Thank you for listening!

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