Key Elements of Scientific Papers

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How do we write good papers?

vs.

What do readers need in a paper?

WEAPONS OF THE MEEK
How Churches Influence Public Policy

By ANNA GRZYMALA-BUSSE*

HOW do organized religions influence policy? Historically, for all their concern with the sacred and divine, religious groups have also been adept players at secular and pragmatic politics: legitimating monarchs, shaping public morality, exerting control over education and the welfare state, or simply securing a favorable legal status. Yet in the

1

What?

How?

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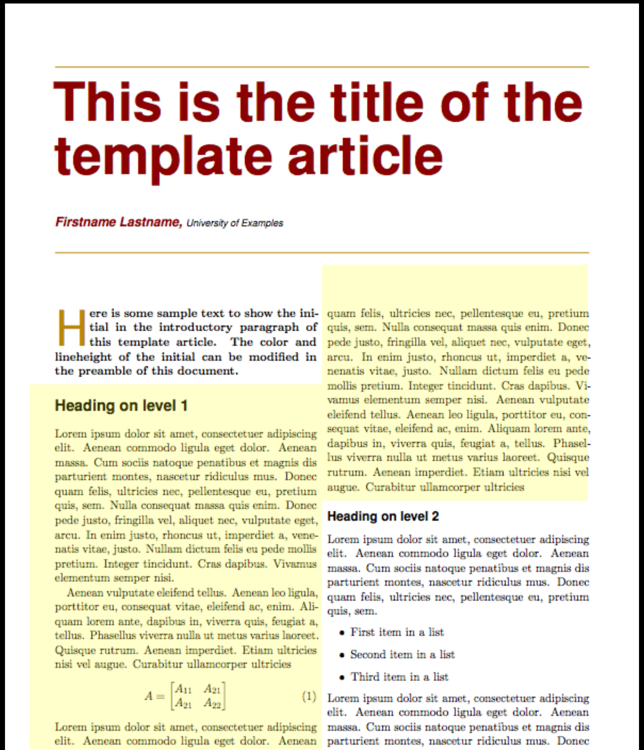
Article level

function of the sections?

“moves” at the article level

2



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Section level

What?

function of paragraphs in the section?

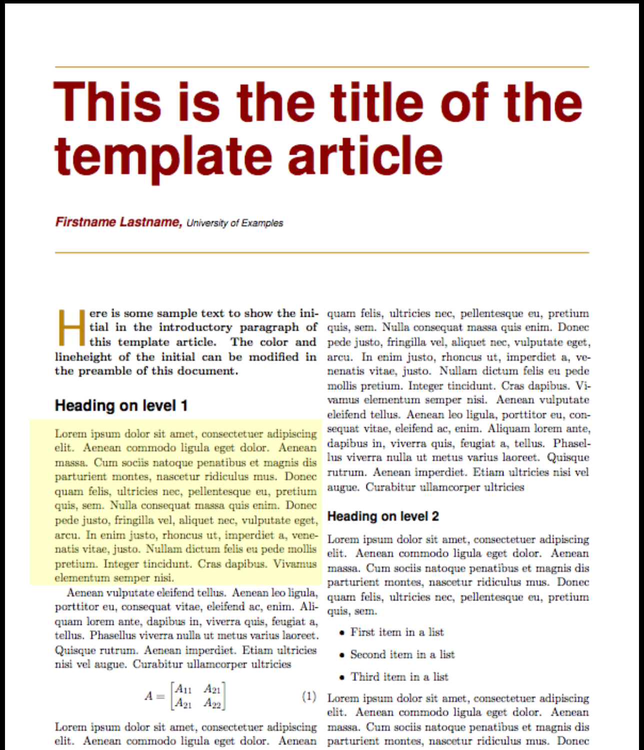
How?

"moves" at the paragraph level

3

What?

How?



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Paragraph level

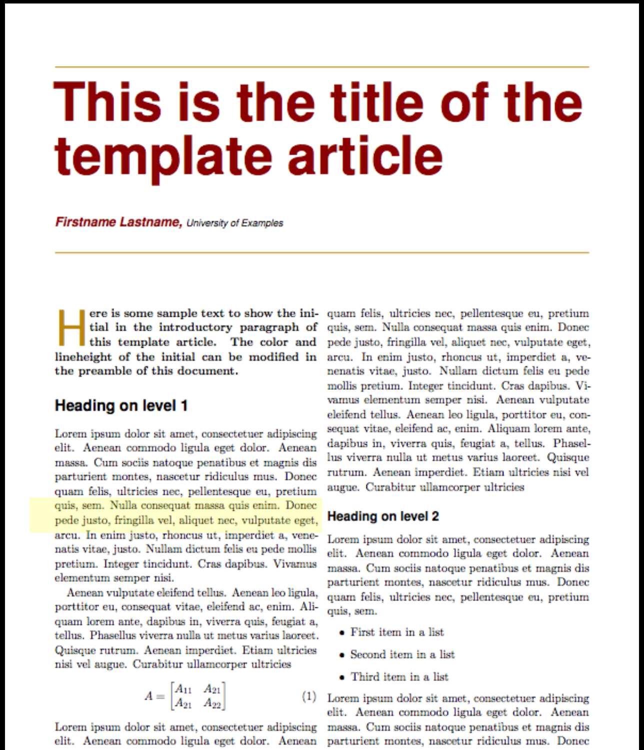
function of an individual paragraph?

“moves” within paragraphs

4

What?

How?



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Sentence level

function of a sentence?

“moves” at the sentence level

		What?	How?
1	Article level	function?	“moves”
2	Section level	function?	“moves”
3	Paragraph level	function?	“moves”
4	Sentence level	function?	“moves”

		What?	How?
1	Article level	function?	“moves”
2	Section level	function?	“moves”
3	Paragraph level	function?	“moves”
4	Sentence level	function?	“moves”

1

Technique: Plan/Check your OC[A]R

		What?	How?
1	Article level	function?	“moves”
2	Section level	function?	“moves”
3	Paragraph level	function?	“moves”
4	Sentence level	function?	“moves”

2

Technique: Map it out

		What?	How?
1	Article level	function?	“moves”
2	Section level	function?	“moves”
3	Paragraph level	function?	“moves”
4	Sentence level	function?	“moves”

3

Technique: Reverse outline

- Link back?
- Issue?
- Point?

- Link back?
- Issue?
- Point?

Here, we measured both direct and indirect fitness components of female house crickets, *Acheta domesticus*, mated to either attractive or unattractive males for the term of their adult life span. We present a female's total fitness as both a rate-sensitive (the intrinsic rate of increase) and a rate-insensitive estimate of fitness (the total number of grandchildren) in interpreting our findings.

Results

Our treatment did not affect the number of grandchildren produced via daughters, via sons, or in total (Table 1). Thus there was no difference in the rate-insensitive estimate of fitness for females mated to males of differing attractiveness. Females that mated with attractive males did, however, experience higher relative intrinsic rates of increase (r_{est}) than females mated with unattractive males (Table 2).

The overall difference between the treatments on r_{est} was not due to any single fitness component (Table 2). When looking at the fitness components individually, the strongest effects were a survival cost experienced by females mated to attractive males (Figure 1), and an indirect benefit because sons of attractive males were more than twice as likely to mate as those of unattractive males (see Table 1). However, neither of these components alone can explain the significant difference in r_{est} between females mated to attractive or to unattractive males (see Table 2). Treatment differences in other fitness components, although individually not significant, still influenced our estimates of the overall fitness consequences of mating with attractive males. In particular the combined effect of sons' attractiveness and daughters' fecundity had a significant effect on our model (see Table 2).

When we combined a female's egg number, egg width, and egg length (from the first week of egg laying) into a single index of reproductive effort, we found that females mated to attractive males exerted greater reproductive effort in the first week of the experiment than those mated to unattractive males (principal component 1: attractive = 0.239 ± 0.116, unattractive = -0.233 ± 0.199, randomisation test $p = 0.043$). Of the constituent measures of week 1 reproductive effort, only egg width differed significantly between treatments (egg number: attractive = 129.07 ± 15.08, unattractive = 108.17 ± 18.84, $p = 0.382$; egg width: attractive = 0.618 ± 0.008, unattractive = 0.568 ± 0.014, $p = 0.005$; egg length: attractive = 2.71 ± 0.017, unattractive = 2.68 ± 0.025, $p = 0.373$).

Table 1. The Effects of Mating with Either Attractive or Unattractive Males on a Number of Fitness Components

Category	Fitness Component	Attractive, Mean (SE)	Unattractive, Mean (SE)	p
Relative number of grandchildren				
	Via sons	1.183 (0.286)	0.817 (0.259)	0.374
	Via daughters	0.878 (0.173)	1.122 (0.339)	0.537
	Total	1.030 (0.215)	0.969 (0.290)	0.871
Direct fitness components				
	Survival (days)	6.58 (0.63)	10.43 (0.98)	0.001
	Lifetime fecundity (eggs)	160.70 (20.24)	209.70 (40.41)	0.290
Indirect fitness components via sons				
	Generation time (days)	68.91 (1.59)	72.61 (2.46)	0.209
	Number maturing	19.75 (3.42)	27.58 (7.99)	0.373
	Attractiveness (%/female)	0.62 (0.03)	0.29 (0.03)	0.000
	Weight at maturity (mg)	312.54 (3.04)	317.58 (4.73)	0.548
	Survival (days)	22.29 (0.79)	22.08 (0.89)	0.909
Indirect fitness components via daughters				
	Generation time (days)	66.40 (1.54)	72.24 (3.41)	0.099
	Number maturing	20.22 (3.76)	25.59 (7.43)	0.539
	Fecundity (eggs)	349.43 (13.48)	315.56 (19.02)	0.338
	Weight at maturity (mg)	338.24 (5.78)	341.12 (8.01)	0.844
	Survival (days)	23.49 (0.56)	25.97 (0.85)	0.102

DOI: 10.1371/journal.pbio.0030033.t001

Discussion

To provide an inclusive estimate of the total fitness consequences of mating with an attractive or unattractive male, we quantified both the direct costs to females and the indirect benefits to their offspring. We made two main findings. First, the mating-associated costs borne by females are greater when mating to attractive males throughout their

Table 2. The Sensitivity of r_{est} to Variation in Individual and Combined Fitness Components

Models	$\bar{r}_a$	$\bar{r}_u$	Test 1 ($\bar{r}_a$ Versus $\bar{r}_u$) p	Test 2 (Reduced Versus Full Model) p
Full	1.190	0.801	0.013	—
Excluding fitness components via sons				
Generation time (a)	1.184	0.816	0.015	0.233
Number maturing (b)	1.105	0.895	0.004	0.604
Attractiveness (c)	1.154	0.846	0.044	0.073
Survival (d)	1.189	0.811	0.015	0.253
Excluding fitness components via daughters				
Generation time (e)	1.182	0.818	0.019	0.217
Number maturing (f)	1.094	0.906	0.005	0.485
Fecundity (g)	1.189	0.811	0.013	0.256
Combined fitness components				
a and b	1.125	0.875	0.006	0.444
a and c	1.148	0.852	0.050	0.066
a and d	1.183	0.817	0.017	0.223
a and e	1.175	0.825	0.021	0.178
a and f	1.088	0.912	0.007	0.4112
a and g	1.183	0.817	0.015	0.225
b and c	1.096	0.904	0.031	0.112
b and d	1.105	0.895	0.003	0.549
b and e	1.122	0.878	0.007	0.407
b and f	1.038	0.962	0.002	0.131
b and g	1.104	0.896	0.004	0.596
c and d	1.153	0.847	0.040	0.071
c and e	1.146	0.854	0.049	0.053
c and f	1.076	0.924	0.025	0.124
c and g	1.142	0.858	0.052	0.047
d and e	1.181	0.819	0.020	0.204
d and f	1.093	0.907	0.006	0.447
d and g	1.188	0.812	0.014	0.254
e and f	1.088	0.912	0.008	0.407
e and g	1.180	0.819	0.017	0.197
f and g	1.096	0.904	0.007	0.499

In each reduced model individual females' scores for the component(s) listed were replaced with experiment-wide mean scores. $\bar{r}_a$ and $\bar{r}_u$ are the mean r_{est} for females mated with attractive and with unattractive males, respectively. Test 1 indicates the significance of the $\bar{r}_a$ versus $\bar{r}_u$ comparison within the reduced model (based on 10,000 randomizations). Test 2 assesses the significance of the change in effect size (based on 10,000 jackknifed pseudoestimates) between the reduced model and the full model.

DOI: 10.1371/journal.pbio.0030033.t002

		What?	How?
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2	Section level	function?	“moves”
3	Paragraph level	function?	“moves”
4	Sentence level	function?	“moves”

4

Technique: List subject + verb pairs

Think of these techniques as tools

Final Questions or Thoughts?

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