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"Air Rage": A Systematic review of Research on Disruptive Airline Passenger Behaviour 1985-2020

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Abstract

Purpose: Disruptive airline passenger behaviour (DAPB), i.e. "air rage", has an adverse impact on crew and passenger well-being and is costly to manage and prevent. Given recent changes in airport management, aircraft design, air traffic volume and behavioural norms this review summaries research findings 1985-2020.

Design/methodology: A systematic review of the research literature containing qualitative or quantitative data examining DAPB.

Findings: Nineteen articles satisfied the criteria for inclusion. Most studies involved surveys of cabin crew members and to a lesser extent pilots, airline representatives, passengers and business customers. Content primarily focussed on the frequency and characteristics of DAPB, whilst consequences for staff and evaluation of training to manage DAPB was less represented. A paucity of current research was noted which is not in keeping with the changes over the last decade in the aviation industry and the increase in DAPB events.

Practical implications: A better understanding of the environmental, social and psychological factors underlying DAPB and the effectiveness of staff training and interventions that promote a safe travel environment are required.

Social implications: The current industry trend toward sustainability and better management of security challenges must extend its focus to DAPB, in order to reverse the recent trend of social irresponsibility in air travellers.

Originality/value: This study presents a summary of current findings on DAPB.

Keywords: Disruptive Airline Passenger Behaviour (DAPB), Unruly Passenger Behaviour (UPB), Air Rage, Cabin Rage.

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1. Introduction

Air travel can be stressful with passengers likely to experience a range of stressors before boarding (e.g. tiring airport commutes; early or late flight times; pressured security and boarding procedures) and whilst in-flight (e.g. cramped seating; physical discomfort; hypoxia; headaches; noise and anxiety) (Genç & Dural, 2009; Hubbard & Bor, 2016). These stressors in combination with individual factors (e.g. anxiety, intoxication and mental illness) can lead to disruptive behaviour and jeopardise safety—a phenomenon known as Disruptive Airline Passenger Behaviour (DAPB), unruly Passenger Behaviour (UPB) or more generally (and especially if aggression is involved) as "air-rage" or "cabin-rage" (Felkai & Kurimay, 2017; Gordon, Kingham & Goodwin, 2004; International Air Transport Association, 2019; Lane, Bor & Laughead, 2002; Rhoden, Ralston & Ineson, 2008; Vivian, 2000).

DAPB includes: refusing to comply with safety instructions, verbal/physical/sexual abuse directed towards cabin crew and other passengers, assault, damage to the aircraft, and damage to employee property (Barron, 2002). It encompasses incidents that occur in the airport and in-flight. Available evidence suggests that the frequency of DAPB has dramatically increased over the past few decades and may only be reaching a plateau in the last few years (Timmis, Ison & Budd, 2016). According to the International Air Transport Association (IATA), 58,000 DAPB incidents were reported from 2007 to 2016 (International Air Transport Association, 2019) with an Australian airline reporting an average of 30 incidents per month in 2015 (Goldsmid, Fuller, Coghian & Brown, 2016). DAPB is known to adversely impact both cabin staff (e.g. poor job satisfaction, worse psychological and physical well-being and compromised occupational health and safety) and, although less well documented, accompanying passengers (e.g. increased vulnerability and decreased well-being) (Akgeyik, 2011; Ballard et al., 2006; Boyd, 2002; Gale, Mordukhovich, Newlan & McNeely, 2018; Hu, Hu & King, 2017; Williams, 2000). DAPB is also costly. For example, in 2015 the consequent re-routing of a transatlantic flight to Belfast together with the fuel dump and a mandatory 24-hour delay is reported to cost one airline an estimated £500,000 ("Airrage accused does not accept he caused flight diversion", 2015). DAPB has been associated with alcohol intoxication, illegal smoking, arguments about carry-on bags, poor customer service, mental illness, cramped seating, delayed flights, front loading and class envy, upgrade disputes and environmental stressors (e.g. low cabin pressurisation and hypoxia) (Akgeyik, 2011; Anglin, Neves, Giesbrecht & Kobus-Matthews, 2003; Baranishyn, Cudmore & Fletcher, 2010; Bell, Green, Fisher & Baum, 2001; Bor, 2003; Bor, Russell, Parker & Papadopoulos, 2001; DeCelles & Norton, 2016b; Hunter, 2007; Moyle & Muir, 2005; Smart & Mann, 2003).

A consistent call in the literature has been for a better understanding of the factors underlying DAPB to thereby inform prevention strategies and cabin crew training (Yang & Chang, 2012). Almost two decades ago Morgan and Nickson (2001) reviewed the air rage phenomenon in an effort to measure its extent, contributory factors, and identify potential solutions, however this was published prior to the 9/11 terrorist attack. Since that time the landscape of air travel has changed considerably with a greater emphasis on security, larger planes but more cramped seating, larger but more congested airports and an increasing number of travellers and especially from Asia (with many first-time travellers). To address the demand for current and topical air safety research, the aim of the present study was to review the extant research literature and provide an overview of DAPB findings to date.

2. Method

A systematic review of the literature was conducted in January 2020, using the following exclusion criteria, inclusion criteria, search terms, and databases.

2.1. Exclusion Criteria

Studies were excluded if they were; 1) not peer-reviewed, i.e. legal commentary, industry commentaries, case studies, policy reviews, expert opinion papers or book chapters, and unpublished work; 2) secondary sources including general summaries and reviews, letters to the editor and replies to letters; 3) studies where the body of the text was not in English, or where the full text was not available; or 4) studies examining flight anxiety and phobia which have not included DAPB data and any articles that discussed anger, rage and violence, but did not included DAPB-related data.

2.2. Inclusion Criteria

Studies were included in the systematic review if they were published in scholarly (peer reviewed) journals and included an analysis of empirical data (qualitative or quantitative).

2.3 Search Terms

The following search terms were used in the systematic review: air rage; disruptive airline passenger behaviour; DAPB, cabin rage; airborne stress; unruly passenger behaviour; misbehaviour; UPB; and travel and disruptive behaviour. Boolean terms were used to link specific words, for example: "air rage".

2.4 Databases

General, psychology, engineering, and safety specific databases were used to identify articles and include: Academic Search Premier; BASE; Compendex; Health and Safety Science Abstracts; HSELINE; JSTOR; Oxford Academic; ProQuest: Advanced Technologies and Aerospace Database; PsychINFO; Research Library; Science Direct; Scopus; SpringerLink. Publications were limited to English.

3. Results

We identified 19 studies in the systematic review and the findings are summarised in Table 1. The overarching characteristics of the 19 studies are outlined here, whilst the Discussion synthesises the findings therein.

Most studies administered questionnaires to cabin crews and to a lesser extent passengers, business customers, and specialised airline staff (e.g. pilots, safety officers, cabin crew instructors, operations mangers and airline customer service workers). Five studies examined DAPB databases. These were sourced from government departments, airline companies and an airport police department (Bor, 2003; DeCelles et al., 2019; DeCelles & Norton, 2016a; Burgess, 2002). One study reviewed newspaper articles of DAPB incidents (Smart & Mann, 2003), and a further observed passenger behaviour prior to boarding (DeCelles et al., 2019).

Apart for one exception, studies have overwhelmingly reported findings which have examined passenger versus airline staff conflict. The exception was Salinger et al. (1985) who administered a questionnaire to 251 US cabin

crew assessing the frequency of assault for the calendar year 1982 and report a 4% incidence of airline staff versus airline staff assault. Most studies report findings from a single data source (e.g. questionnaires, interviews, database records or newspaper articles). Only two studies report findings from multiple data sources. Most studies have focussed on inflight DAPB incidents with only two examining pre-boarding and a further both inflight and pre-boarding DAPB incidents. The majority of studies have examined airlines, participants or databases from the US (Ballard et al., 2006; DeCelles et al., 2019; Gale et al., 2018; Girasek & Olsen, 2009; Hunter, 2007; Salinger et al., 1985; Vredenburgh et al., 2015), followed by the UK (Bor, 2003; Boyd, 2002; Burgess, 2002; Rhoden et al., 2008), while single studies have reported findings from cabin crews servicing Australian (Williams, 2000), Taiwanese (Hu, Hu et al., 2017), Turkish (Akgeyik, 2011) and Italian (Ballard et al., 2006) airlines. Single studies have also surveyed passengers at Hong Kong airport (Tsang, Masiero et al., 2018) and Taiwanese airline customer service workers (Yang & Chang 2012), and summarised media reports of passengers flying on Canadian airlines (Smart & Mann, 2003). Two studies did not define the nationality of the cohort or database (Bor, Russell et al., 2001; DeCelles & Norton 2016b). Eleven studies were undertaken between 1985-2009 and eight between 2010-2019.

4. Discussion

Examination of the research findings revealed three overarching research themes; 1) the frequency and characteristics of DAPB; 2) the consequence of DAPB for crew well-being and training, and; 3) the factors explaining DAPB. Studies conducted in the last decade reveal that the focus remains on the frequency and characteristics of DAPB, with only a single study examining the consequence of DAPB for staff well-being and training (Yang and Chang, 2012), and a further study on possible underlying factors (DeCelles, DeVoe et al., 2019). Overall, the scientific literature examining DAPB is limited, mainly focused on the frequency and characteristics of DAPB, and much of the work is dated.

4.1. Frequency and Characteristics of DAPB

Several issues bedevil the accuracy of DAPB estimates. These include: under-reporting due to the personal nature of incidents, legal risk associated with disclosure, administrative burden and negative publicity; the biases inherent with mandatory reporting systems such as minimisation and selective reporting; and the adequacy of staff training and reporting mechanisms (Hunter, 2016; Salinger et al., 1985; Vredenburgh et al., 2015). A further difficulty faced by airline staff is deciding whether an incident has met criteria—i.e. the line between 'common' behaviours like impolite passengers and actual abuse can be blurred. As discussed by several authors, DAPB estimates also vary according to national reporting regimes (Schaaf, 2018; Timmis et al., 2016).

Data from the mid-1980s to early 2000s suggests an escalating rate of DAPB. Survey responses from US cabin crew collected in 1985 suggest that 16% had experienced either verbal or physical abuse with 8% experiencing multiple incidents. Questionnaire responses from Australian cabin crew collected in 1994 revealed that 79% of female and 73% of male cabin crew on international flights and 37% of pursers on domestic flights frequently dealt with angry passengers (Williams, 2000). Survey responses collected over the period 1999-2003 indicate that up to a fifth of UK cabin crew have experienced an abusive passenger often or on every flight with the majority of UK cabin crew expressing concerns about the number of incidents of abuse and rudeness that are not recorded (Boyd, 2002; Rolfe, 2000). One UK study also reported that half of the DAPB incidents were serious enough to require police assistance (Burgess, 2002). In contrast to self-report staff survey data, examination of airline database records suggests that DAPB incidents may have actually decreased rather than increased from late 1990s to early 2000s. In their analysis of UK Civil Aviation Authority database of DAPB incidents, Bor (2003) reports a decrease in frequency from 1:15,000 in 1992 to 1:36,000 in 2003. Reconciling the inconsistencies between self-report and database responses is complex and is likely explained by reporting and methodological differences.

In response to the need for standardised reporting the IATA have employed the Safety Trend Evaluation, Analysis and Data Exchange System (STEADES) to generate a global database of DAPB incidents coded according to International Civil Aviation Organisation criteria (1 = verbal disruptive behaviour, 2 = physically

disruptive behaviour, 3 = life-threatening behaviour and 4 = attempted or actual breach of the flight crew compartment). Inspection of the IATA database suggests that the frequency of DAPB incidents has steadily increased since 2007 reaching a peak in 2015 with a possible plateau in the last few years (Timmis et al., 2016). The IATA report the frequency of DAPB incidents at 1:1,424 flights in 2015 and 1:1,053 flights in 2016 (IATA, 2018). On balance, the available evidence suggests that DAPB has increased over the past few decades and remains elevated.

Although the number of DAPB incidents may have plateaued in the last few years there is some debate as to whether the seriousness of incidents may have increased. In his examination of the 2009-2003 UK database records, Bor (2003) classified DAPB incidents as 'significant' (e.g. smoking in the aircraft's toilet, refusal to follow a crew member's instruction) and 'serious' (e.g. violent or abusive behaviour). Bor concluded that 54% of DAPB incidents were 'significant' while 19% were 'serious' with an estimated frequency of serious incidents at 1:30,000 flights. The proportion of 'serious' incidents appears to have remained relatively stable in the last two decades. Timmis et al. (2016) in their 2016 report to the UK Department of Transport observe that while the majority of incidents reported to the IATA were Level 1 (i.e. verbal abuse), nonetheless, 14% were Level 2-4 (i.e. physical abuse, life threatening incidents and cockpit breaches), i.e. 'serious' and comparable to the earlier estimate reported by Bor.

Taken together the self-report and database findings from the last decades both suggest that the absolute number of DAPB incidents have increased while the relative proportion of 'serious' incidents appears to be stable.

Frequency of Type-1 DAPB Incidents: Verbal Abuse

The most commonly reported DAPB incident was verbal abuse. In their 2001 survey of cabin crew, Lane et al. (2002) reported that staff experienced very high rates of verbal abuse with many indicating that they felt at risk of physical violence "beyond their control". In a survey of UK cabin crew, Boyd (2002) notes that 50% had experienced an increase in verbal abuse over the preceding year. The high frequency of verbal abuse appears to be a longstanding issue. More recent IATA data collected in 2016 indicates that verbal abuse accounted for 86% of DAPB incidents (IATA, 2018). Consistent with the 2016 IATA findings, Gale et al. (2018) in their 2014 questionnaire report that 89.6% of US and Canadian cabin crew (N = 4,549) had experienced verbal abuse.

Frequency of Type-2 DAPB Incidents: Physical Abuse

Airline crew are responsible for handling DAPB incidents and are therefore most exposed to physical conflict. IATA data for 2016 indicate that 12% of DAPB incidents were rated at Level 2, i.e. physical abuse (IATA, 2018). Exposure to violence is a recognised occupational stressor in cabin crews, especially women who are also at extra risk of sexual violence (Ballard et al., 2006; Gale et al., 2018; Pontell, Salinger & Geis, 1983). Boyd (2002) surveyed airline and rail cabin crew and found for both cohorts combined that 60% had experienced at least one episode of physical abuse in the preceding year. Francis-Way (2002) found that 1% of US business leaders admitted striking airline staff. Airline staff may not be the only group at risk for assault. In a detailed examination of UK incidents between 1999-2003, Bor (2003) found passengers were equally as likely as airline staff to be the target of physical violence (48% versus 52%). Smart and Mann (2003) reviewed newspaper articles which reported the 66% of DAPB incidents on Canadian airlines involved physical aggression directed at airline staff and 28% at other passengers. A possible interaction between the gender of cabin crew and passenger may also exist. Female cabin crew report that male and female passengers are equally like to perpetrate DAPB whereas male cabin crew report that DAPB perpetrators are overwhelmingly male (Akgeyik, 2011).

Female cabin crew compared to other female dominated professions such as teaching and nursing are at a notably higher risk of sexual harassment (Gale et al., 2018; Gunnarsdottir, Sveinsdottir, Bernburg, Fridriksdottir & Tomasson, 2006). Nevertheless, while it is a recognised issue in the workplace, there is a paucity of research regarding the nature of sexual harassment from passengers. Ballard et al. (2006) report that 23% of Italian female cabin crew had experienced sexual harassment by a passenger, 4% also stating it had occurred in the preceding year. A decade later Gale et al. (2018) report a much higher frequency of sexual harassment in US and

Canadian cabin crew. For both genders combined, 69% of cabin crew report passenger-related sexual harassment in the past year, 1% of which were sexual assault. Moreover, they report that 26.4% of flight attendants had experienced sexual harassment and 2.1% sexual assault, both of which were in turn associated with increased odds for depression, fatigue, sleep and musculoskeletal complaints and especially in female flight attendants.

Sexual harassment and assault of airline staff extends beyond incidents perpetrated by passengers. Of note is that the frequency of sexual harassment and assault by a superior or co-worker in Gale et al.'s (2018) study was only slightly lower than those perpetrated by passengers, suggesting a broader issue of workplace safety.

4.2. Consequences of DAPB for Crew Well-being and Training

The literature examining the consequence of DAPB on staff well-being is relatively limited. The immediate impact of dealing with angry passengers is the disruption in work performance (Williams, 2000). In the longer term it is associated with a dread of similar incidents, questioning career choices, greater emotional exhaustion, higher levels of fatigue, aggression and social anxiety, lower self-confidence and poorer physical health (Williams, 2000; Hu et al., 2017; Akgeyik, 2011; Williams, 2000; Gale et al., 2018). Negative consequences have also been reported for cabin staff who have witnessed but not directly experienced DAPB (Akgeyik, 2011). Although the dimension is under-researched, there is also a possible interaction between DAPB, gender and well-being. Female cabin crew are likely to respond less assertively to aggressive passengers than males, but as a consequence are more likely to experience greater fatigue (Williams, 2000). As yet, the consequences of verbal versus physical abuse on well-being are unclear. One exception is research into sexual abuse, which demonstrates that regardless of gender, both sexual harassment and assault have been associated with worse physical and psychological health (Ballard et al., 2006; Gale et al., 2018). The impact of DAPB on other measures of staff well-being such as absenteeism and staff turnover are poorly documented. In 1994, a survey of 2,912 Australian Flight Attendants, reported that 17% took time off work as a result of passenger abuse (Williams, 2000). Current data is not available.

Only a handful of studies have examined the consequences of DAPB for crew training and the relevance of earlier findings is questionable given the changes in work practices over the past decades. Barron (2002) interviewed 15 flight crew educators and found that DAPB was not included in 80% of program curricula. Bor et al. (2001) found that 38% of airlines do not have any policy around the role of flight deck crew in assisting cabin crew to manage incidents of passenger violence, and likewise do not offer formal training in the area. Lane et al. (2002) surveyed 104 cabin crew who overwhelmingly reported that not enough was being done to manage DAPB and they actively welcome the opportunity for further training. Boyd (2002) quotes an airline cabin crew member, "Airlines should invest more in the experience of all staff in all areas and encourage consistency of strict rules in application (p164)". Rhoden et al. (2008) undertook in-depth interviews with eight experienced cabin crew and instructors regarding the effectiveness of training programs. While Rhoden et al. (2008) assert that comprehensive training is widely supported by stakeholders (p.540) they note that the format and efficacy of such training is still questioned. The programs reviewed by participants in Rhoden et al.'s study on average lasted for 4h and all contained content aimed at raising cabin crew awareness of the factors contributing to DAPB. However, they varied in depth, contributory factors were sometimes overlooked (e.g. altered behaviour because a medical issue versus DAPB), and information on aggression theory and explicit instructions on aggression management was sometimes missing. They further noted that while a focus on knowledge of DAPB triggers and social/emotional contexts in training courses is important, it does not necessarily provide cabin crew with the confidence to cogently intervene in DAPB incidents. Indeed, as Rhoden et al. suggest, evaluation of the efficacy of DAPB training courses may not be possible due to "...the spontaneous and unique natures of DAPB incidents..."(p. 546). Teaching social skills such as aggression management is a challenge. A promising approach is problem-based 3D simulations (e.g. Reisoğlu, Topu, Yılmaz, Karakuş Yılmaz & Göktaş, 2017) which may provide the realistic challenges faced in the moment of a disruptive airline passenger behaviour requiring the learner to prepare, respond and then reflect on a DAPB incident. Consistent with Rhoden et al.'s finding regarding a lack of standardised training, Yang and Chang (2012) also report that competence in recognition and management of DAPB differed widely according to company policy, training, and supports—limitations which

point to the opportunity for evaluation studies to establish best practice. In a study conducted in 2000 interviewed ten UK cabin crew and reported that the majority were satisfied with their initial DAPB training (Rolfe, 2000). Nevertheless, the participants in Rolfe's study also pointed to the need for annual refresher training for cabin crew, involvement of the police and Crown Prosecution Service in real-time scenarios, more time allocated for role playing and that annual refresher training needs to include statistical updates about DAPB incidents. On balance and when the research findings are considered together with expert commentaries a clear message is the need for more effective training (Goldsmid et al., 2016; Schaaf, 2018).

At present information on the effectiveness of training programs for managing DAPB have not been reported and it is difficult to make recommendations. Authors have proposed the development of best practice frameworks, greater service training, gamification training techniques and recommended simulation-based training approaches (Berkley & Ala, 2001; Goldsmid et al., 2016; Morgan & Nickson, 2001; Yang & Chang, 2012; Hunter, 2011; James, 2014; Hu et al., 2017; Piñar-Chelso & Fernández-Castro, 2011). It has also been proposed that lessons can be learned from studies into road rage (Barron, 2002), and the propensity for road rage has been associated with a propensity for 'air rage'. For example, (Bricker, 2005) developed a 22-item air travel stress scale containing three factors: air travel anxiety; air travel anger; and Airline/airport trust; which overall displayed a strong relationship with driving anger (r = .50) and trait anger (r = .43).

Whilst not the industry standard, some airlines have also proposed self-defence training as a strategy to manage DAPB. Hong Kong Airlines is training its cabin crew in martial arts as an active measure in managing unruly passenger behaviour (Whitehead, 2013). The US Transportation Security Administration (TSA) Office of Law Enforcement/ Federal Air Marshal Service (FAMS) is offering free self-defence training for any current flight crew member employed at an airline (Aratani, 2016). Korean Air staff have been trained to use tasers in order to deal with unruly or violent passengers (Schwarz, 2017).

As a more systemic response to DAPB, airlines have also constructed databases to identify and blacklist disruptive passengers and, as well, have implemented stricter pre-boarding screening protocols (Berkley and Ala, 2001). They have also trialled notification strategies. Since 1998, British Airways have used 'yellow card' warnings to unruly passengers in flight and in 2015 have extended this to those in check-in and departure areas (Leff, 2015). Burgess (2002) evaluated the effectiveness of police patrols issuing 'yellow cards' as warnings to passengers displaying erratic and aggressive behaviour at Manchester airport and reported a subsequent decrease of inflight DAPB incidents.

Authors have also called for stronger legal penalties to deter DAPB. Bor et al. (2001) note that responses from airlines indicated that the media have made 'air rage' fashionable and the penalties for aggressive behaviour are inadequate. Since that publication, governments have introduced stronger penalties. In Australia, two Federal acts encompass mid-air offences—the Crimes (Aviation) Act 1991 and the Civil Aviation Act 1988 both of which allow for hefty jail terms, including 10 years behind bars for anyone who assaults, threatens with violence or intimidates a cabin crew member (McKinnell, 2019). The advent of social media is also changing the awareness of unruly behaviour by documenting events related to passengers and airline employees (Carruthers, 2018). Recently, advertising campaigns have started targeting attitudes of potential passengers to address poor behaviour toward service staff, such as curbing the increasing rates of violence in healthcare settings toward nurses and first-response teams (Jones, 2017; Tyeson, 2017). A similar awareness-raising campaign may be effective in setting standards of behaviour for passengers and pre-empting DAPB.

4.3. Factors explaining DAPB

A diversity of factors are thought to explain DAPB, but evidence of causation is presently lacking. In a study examining in-flight customer service, Yang et al. (2010) identified 16 unruly passenger behaviours faced by cabin crew. The three most challenging behaviours included: (1) passengers with poor mental condition; (2) passengers who conceal or avoid providing important information; and (3) passengers under intoxication or inebriation on the plane. Yang and Chang (2012) in a parallel study involving ground staff from three international airlines servicing a Taiwanese airport identified 17 unruly passenger behaviours. Of these, five were in-common to all airlines: (1) violent speech or behaviour; (2) under the influence of alcohol or drugs; (3) customers who are picky

or fussy about services; (4) passengers who collect evidence using digital equipment; and (5) customers who demand to speak to the duty supervisor. The findings from the latter two studies are consistent with the general findings that the most commonly attributed causes of DAPB are alcohol/medications and illegal smoking, medications and drugs and poor customer service. Other less frequently reported causes of DAPB include: airport-related stressors, airplane-related stressors, passenger-type and a change in public mores regarding appropriate travel behaviour.

Alcohol and Illegal Smoking

Alcohol is thought to be a major contributor to DAPB. This has been attributed to the disinhibition association with intoxication exacerbated by the hypoxia associated with lowered barometric pressure (Petros et al., 2003). Bor et al. (2001) collated ten contributing DAPB factors commonly cited by attendees at training events and presented the list to the chief pilot or operations manager of 197 airlines, 88% agreed that the excessive consumption of alcohol was a key factor. Bor's (2003) analysis of airline incident records 1999-2003 confirmed that approximately 80% of DAPB incidents involved excessive consumption of alcohol, or illegal smoking (e.g. in lavatories). Excessive alcohol consumption and illegal smoking has also been widely reported in media reports of DAPB (Smart and Mann, 2003). Two studies report that alcohol was involved in 40% (Anglin et al., 2003) and 41% (Salinger et al., 1985) of DAPB incidents. IATA data indicates that 31% of DAPB incidents in 2016 involved alcohol/intoxication and 26% compliance with smoking regulations (Timmis et al., 2016). DAPB incidents involving alcohol intoxication and illegal smoking are also evident prior to boarding. In passengers using Manchester airport, Burgess (2002) report that 9% of DAPB incidents involved alcohol or illegal smoking. Despite the high number of incidents involving alcohol, intoxication itself may only partly explain DAPB. Surveys of air crews themselves suggest that precipitant factors go beyond intoxication (Lane et al., 2002).

Surveys undertaken in passengers who fly and intend to consume alcohol suggests that they do not expect to pose a risk to others (Girasek & Olsen, 2009). Passenger attribution of alcohol as a precipitating factor for DAPB has also changed after the 9/11 terrorist attack. In a serendipitous study, Francis-Way (2002) in October 2001 assessed the factors contributing to DAPB in cohort of US Chamber of Commerce members thus permitting an examination of behaviours pre and post '9/11'. Francis-Way (2002) reported after 9/11 there was less agreement that alcohol contributed to DAPB (81% vs 65%) but continued and strong agreement that oversold and crowded flights contributed to DAPB (76% vs 72%). The immediate post 9/11 period was also characterised by a notable decrease in passenger and airline staff conflict with business leaders reporting fewer arguments with airline staff (17% vs 6%) and a lower likelihood of striking staff (1% vs 0%).

Medication and Illicit Drugs

It is likely that frequency of DAPB will be higher in population cohorts which tend to be over-reported in case/survey studies, such as passengers on medications. Unfortunately, and while identified as a cause of DAPB, data examining the relationship between medication use and DAPB is limited to case studies. There is anecdotal evidence, however, that the risk of physical abuse is higher if the incident involves a medicated passenger. In a 2018 survey of 100 flight attendants, a UK travel insurance company reported that 38% of respondents had been physically abused, 46% had received a verbal insult and 7% had been sexually harassed by a medicated passenger (Matousek, 2019). That study, however, did not distinguish illicit from prescribed drug use and to date information on the percentage of DAPB incidents that are related to illicit medications is limited. Dowdall (2000) reports that British Airways experienced 3,386 inflight medical incidents or about 1 per 11 000 passengers with drug overdose account for 2% of cases, representing a very small proportion of passengers who have likely taken illicit medications. Despite the potentially high frequency of illicit medication, Smart and Mann (2003) note that none of the 29 DAPB incidents reported in the Canadian Press identified illicit drug use as a cause.

Customer Service

Customer service has been identified as a contributing factor to DAPB. Although receiving poor customer service may not in itself translate directly into DAPB, Hunter (2007) demonstrated that passengers were more likely to approve of another patron engaging in DAPB if customer service was considered poor. Conversely,

good service has been associated with a lower propensity for DAPB (Hunter, 2007). In one of the few studies to examine in detail the behaviours affecting customer service, Piñar-Chelso and Fernández-Castro (2011) developed an observational scale to evaluate cabin crew management of disruptive behaviour and asked two expert cabin crew and five airline customers to evaluate the responses of 18 Spanish cabin crew to video simulations of two Type 1 (i.e. verbal) and Type 2 (i.e. physical) disruptive passenger behaviours. They found that the expert cabin crew positively judged: eye contact; clear gestures; rate of speech; fluency; duration of explanation; transmits self-confidence; inspires trust and credibility; shows concern for service with consideration and respect; and, negatively judged, uncontrolled attitude (i.e. insecurity, nervousness and fear). These attributes are mostly in contrast to the behaviours which were judged positively by airline customers: transmits self-confidence; has put himself/herself in the client's position; has understood what the client wanted and has tried to provide it; kindly; with consideration and respect; and, negatively, uncontrolled attitude and excessive firmness. The contrasting set of attributes indicate that the perception of good customer service is not the same for cabin staff and passengers which has direct implications for staff training and management of DAPB.

Airport Stressors

Airports can be stressful and if travel expectations are unmet and coping strategies ineffective can lead to anger (Menon & Dube, 2004; Menon & Dubé, 2007). DeCelles et al. (2019) report findings from an observational study of passenger behaviour prior to boarding. They found that passenger aggression was related to situational stressors (e.g. security line waiting time, time to departure gate, number of oversold seats, longest question line at counter, time passengers started to line up, weather related flight delays and non-weather-related flight delays) and physiological stressors (noise, babies crying, subjective temperature, subjective crowdedness, number of passengers and employee helpfulness). They also observed that situational but not physiological stress was associated with greater employee helpfulness. In a series of follow-up studies aimed at delineating the observational findings, DeCelles et al. (2019) also examined the emotional responses of passengers and airline custom service workers to vignettes containing descriptions of either neutral, situational or physiologically stressful incidents. They found that situational and to a lesser extent physiological stress was associated with increased passenger anger and fear which, in turn, were associated with increased passenger aggression. Turning to customer service workers, they found that situational but not physiological stress was associated with an increased perception of passenger fear which, in turn, was associated with increased customer service workers empathy and helpfulness.

The contribution of specific airport-related stressors to DAPB is limited to studies examining flight delay. Flight delays are common and a known source of passenger dissatisfaction especially if it is attributed to internal (e.g. flight cancellations) compared to external causes (e.g. weather) (Anderson, Baggett, and Widener, 2009). Delayed flights have been associated with DAPB in some but not all studies (Baranishyn et al., 2010; Bor et al., 2001; DeCelles et al., 2019; DeCelles & Norton, 2016a). Flight Delay is but one of many situational stressors experienced by travellers and point to the role that the travel experience prior to boarding can potentially deplete emotional and cognitive resources and in vulnerable individuals consequently lead to less self-control and aggression in the aircraft.

Airplane Stressors

Aircraft can be a stressful environment (Ahmadpour, Robert & Lindgaard, 2016; Moyle & Muir, 2005). Of the various potential stressors and their contribution to DAPB, the only items explored to date are boarding through first class, flying Economy and reduced personal space.

Boarding through first class and possibly the presence of First class itself has been associated with DAPB. DeCelles and Norton (2016a) report a higher frequency of DAPB in Economy classes on flights with compared to those without a First class cabin (1:632 versus 1:7,142 with the frequency of DAPB for First class passengers at 1:3,225 per flight). Nevertheless, DeCelles and Norton's (2016a) findings have been contested and not all studies report an association between flying economy and DAPB (Crede et al., 2016; DeCelles & Norton, 2016b; DeCelles & Norton, 2016c; Giner-Sorolla, 2016; Salinger et al., 1985).

It is unclear why Economy class is necessarily associated with DAPB, but a noticeable trend in the last few decades is the steady decrease in leg room and seat pitch and, consequently a greater likelihood that personal space will be violated (Whitley and Gross, 2019). Violation of personal space has been reported as potent precursor for DAPB in some but not all studies (Vredenburgh et al., 2015; DeCelles & Norton, 2016a). In a study that examined personal space, passenger ethnicity and DAPB, Tsang et al. (2018) report that Asian compared to non-Asian passengers were more tolerant of intrusion into personal space. However, and regardless of ethnicity, passengers were less tolerant of intrusions into personal space if they had a higher education, were on longer flight durations, flying business/first class, travelling for leisure or business (versus visiting friends/family) and were more frequent flyers. In a study investigating the factors influencing passengers anger, Vredenburgh et al. (2015) report that 15% of passengers had experienced serious disagreements with fellow passengers and that the top three reasons for disputes involved intrusion into personal space (i.e. conflict over armrests, someone reclining into the passenger's space and child kicking the seat). Of note is that passengers so affected are unlikely to ask for assistance when dealing with a disruptive passenger with only 19% of affected passengers asking a flight attendant for assistance. These authors also examined the factors that led passengers to act on their anger. They found that confinement, discomfort, and lack of personal space were factors in passengers acting out anger, whereas noise and hunger led to anger but not action.

Passenger Characteristics

Several personal characteristics have been associated DAPB and include male gender (especially younger males), higher education levels and a demanding and intolerant personality (Akgeyik, 2011; Bor, 2003; Salinger et al., 1985; Smart & Mann, 2003; Bor et al., 2001). It is also likely that over-anxious and anger-prone passengers are more likely to become stressed by air travel (Bricker, 2005; McIntosh et al., 1998; Menon & Dube, 2004; Menon & Dubé, 2007). As a consequence, it is reasonable to assume that they will more likely to rely on alcohol and smoking as coping strategies (McIntosh et al., 1998), if anger-prone more likely to be belligerent and if possessing low-control more likely to act antisocially (Meldrum, 2016). Given these risk factors they be potentially at greater risk for DAPB. As yet the psychological profile of DAPB individuals is unknown and as observed by several authors there is not a stereotypical DAPB perpetrator.

Travel Mores

A change in societal attitudes regarding acceptable public behaviour and a greater sense of entitlement may also account for increased disruptive behaviour in air travellers. Hunter (2016) cites Pam Terry a US passenger service agent, "As a society, our manners are simply getting worse... And it doesn't have to involve violence. When a passenger becomes vocal or menacing, you get gun shy knowing there is a chance they might go over the edge. It causes me enormous stress even when they don't get physical" (p117). Small and Harris (2018) reviewed the public reaction to the findings of DeCelles and Norton (2016a) which were reported in a Washington Post article entitled 'Air rage incidents are on the rise. First-class sections aren't helping'. They report that the public attributed DAPB in the article to the stressors associated with air travel (i.e. checking and boarding procedures, limited carry-on space, crowding, small seat size, minimal leg-room and discomfort), unfriendly cabin crew and over-reaction to incidents and the poor treatment of Economy passengers. The public also attributed DAPB to personal characteristics such as lack of responsibility and self-control, and importantly, a change in public mores and an increased sense of entitlement. Notably in their study, the public did not attribute DAPB to a demographic profile. Undoubtably, with the advent of cheaper flights more people are flying and more often, and therefore cabin and ground crew are having to manage a broader range of people and in higher numbers. This includes less sophisticated flyers, and elites who expect preferential treatment (Heaver, 2019; Kim et al., 2018). As society changes so too must the research focus, in particular toward addressing highly prevalent adverse phenomena like DAPB.

5. Conclusion

This systematic review identified 19 peer-reviewed articles containing DAPB data. These studies have mainly focused on the frequency and characteristics of DAPB and to a lesser extent the consequence of DAPB for crew

well-being and training and the factors underlying DAPB. Although studies to date have been informative, a theoretical understanding of the phenomenon remains to be developed. A better understanding of the nature and psychological and social processes by which DAPB works is required. Rhoden et al. (2008) suggest that applying the principles behind the 'psychology of anger' may assist in understanding what triggers otherwise normal people to engage in DAPB. Practical implications are also clear, as many of the articles emphasise strong grounds for the development of better training programs.

DAPB poses a considerable cost, both in terms of financial burdens to airlines and the individual cost to staff and passengers. The current industry trend toward sustainability and better management of security challenges must extend to addressing DAPB with an evidence-based practice approach. This systematic review demonstrates that there is a dearth of empirical peer-reviewed information, and despite a surface-level understanding of contributing factors and prevalence, the processes behind the phenomenon are not well understood. Future research into the theoretical underpinnings of air rage will better assist with the development of new training programs to support staff with the recognition of hazards and management of risks involved with disruptive behaviours.

Author(s)	Data format	Sample/ Participants	Key finding(s)
Salinger, Jesilow, Pontell & Geis (1985)	Questionnaire assessing the frequency of assaults	251 cabin crew (US-based)	 15.9% cabin crew reported having been assaulted 96% cabin crew assaults committed by passengers 4% cabin crew assaults committed by other cabin staff 90.2% cabin crew assaults committed by male passengers with 41% of incidents involving alcohol 44% of incidents involved a prior request refusal by the cabin crew (38.1% liquor, 23.8% baggage, 9.5% information, 9.5% meals and 19.1% other) In almost half of incidents (percentage not reported), offender failed to comply with a request Frequency of assaults higher in first compared to other class passengers No serious injuries reported
Williams (2000)	Questionnaire assessing how often staff dealt with angry passengers	2912 Australian cabin crew	 More incidents involving angry passengers on international compared to domestic flights Dealing with angry passengers was associated with increased frequency of backache, neck pain, indigestion and fatigue Dealing with angry passengers was associated with lower management engagement and increased work speed, pressure and workload 17% of cabin crew took time off because passenger abuse 57% reported that passenger abuse distracted them from doing their job properly 41% of cabin crew developed a long term a sense of discomfort or dread about similar incidents 25% of cabin crew were left questioning their career choice

			• 88% reported requirement to report and record DADD
Bor, Russel, Parker & Papadopoulos (2001)	Questionnaire assessing the requirement to report DAPB incidents, policy requirements, crew training, and perception of causes	A representative staff member from 197 airlines (i.e. chief pilot, safety officer, or operations manager. Country of origin not specified)	 88% reported requirement to report and record DAPB incident 48% reported specific policy regarding the management of a DAPB incident 68% reported that policy on passenger violence was given to passengers however only 18% gave details on how the information was provided with most reporting that it was in confrontation with a violent passenger 38% of airlines offer no training to manage passenger violence Causes of DAPB in descending order included: excess alcohol; belligerent passenger; flight delays; stress of travel; smoking ban; seating discomfort; denial of carry-on bag; excessive passenger expectation; mishandling of passenger problem; and denial of upgrade
Burgess (2001)	Questionnaire assessing frequency and characteristics of DAPB incidents	Cabin crew from 7 airlines using Manchester airport (number of cabin crew not reported)	Majority of cabin crew reported: experiencing DAPB (with half of the cases needing police assistance), insufficient training, insufficient knowledge of the law and awareness of the Greater Manchester Police disruptive behaviour protocol
	DAPB database Manchester UK airport (2000- 2001)	Number of DAPB incidents not reported	 Evaluation of the effectiveness of Greater Manchester Police DAPB protocol revealed that police patrols and the 'yellow card' protocol reduced the DAPB incidence rate Majority of pre-flight DAPB incidents involved arguments with airline staff and only 9% were alcohol or smoking related
Boyd (2002)	Questionnaire assessing DAPB frequency (conducted 1998)	921 cabin crew from three UK	70% reported increased number of abusive passengers in the last year 32% identified abusive behaviour as a high occupational health safety concern 21% reported abusive passengers often or on every flight Less than half received in-depth training on handling violence
	Questionnaire assessing verbal and physical abuse DAPB incidents (conducted 1999)	252 cabin crew from 2 UK airlines and UK railway company	50% of airline cabin crew reported increase in verbal abuse in the last year 60% of cabin crew experienced at least one type of physical abuse in the last year (nb airline and railway cabin crew data combined)
Bor (2003)	DAPB database UK Government (1999-2003	4158 DAPB incidents	DAPB more likely to involve male passengers aged 30-49y Two main contributing factors were illegal smoking (36%) and excessive drinking (45%) Cabin crew warnings effective in 25-66% of incidents Prevalence decreased from 1999 (1:15,000) to 2003 (1:36,000) 224/4158 incidents deemed serious (e.g. physical threats/violence, property damage) 2255/4158 incidents deemed less serious (e.g. smoking, not following safety instructions)
Smart & Mann (2003)	Review of newspaper articles (Canadian press 1998-2000)	29 DAPB incidents	 51.7% of DAPB incidents involved alcohol and 20.7% illegal smoking Physical aggression rarely led to serious injuries 93.1% of DAPB incidents involved male passengers 65.5% of DAPB incidents involved physical aggression to airline staff and 27.6% of DAPB incidents involved physical aggression to other passengers

Ballard et al. (2006)	Questionnaire examining frequency of sexual harassment and health	938 in service and 1017 not in- service Italian female cabin crew	22.5% of cabin crew in service and 21.8% not in service reported passenger sexual harassment during their career 3.7% of cabin crew in service experienced sexual harassment by passenger in the last 12 months Sexual harassment by passenger in the last 12 months associated with an increased likelihood of poor health and psychological distress
Hunter (2006)	Questionnaire assessing attitudes and feelings about DAPB	244 Passengers (boarding 4 major US airports)	A positive customer perception for service was not significantly related to customers having an approving attitude but was significantly related to a lower propensity DAPB A negative customer perception for service was significantly related to a more approving customer attitude but not significantly related to a customer's propensity to DAPB
Rhoden, Ralston & Ineson (2008)	Interview assessing staff training and management of DAPB incidents	2 training and 6 cabin crew (UK-based)	 Most training courses were found to be too short, lacked realism and paid insufficient attention to learning styles. A need was suggested for greater experiential learning
Girasek & Olsen (2009)	Questionnaire assessing passenger and situational factors thought to contribute to passenger alcohol consumption	1,548 Passengers (boarding 24 domestic flights US airport)	14% reported the intention to drink alcohol The intentions to drink was associated with: (1) endorsing social norms that condoned in-flight drinking, (2) holding positive outcome expectancies about drinking, (3) traveling with friends, (4) sitting (or hoping to be seated) in First or Business Class, (5) longer flights, (6) history of drinking more alcohol in other contexts, and (7) having consumed alcohol earlier in the day Passengers who do intend to drink don't expect to pose a risk to others Problematic drinking is rare
Akgeyik (2011)	Questionnaire examining profile of DAPB passengers and impact on cabin crew	187 cabin crew of a Turkish airline	DAPB more likely to involve male passengers and those with high school and above education levels The majority of female cabin crew reported that male and female passengers equally often displayed unruly behaviour versus the majority of male cabin crew who reported that male passengers more often displayed unruly behaviour Cabin crew who were victims of DAPB compared to those not involved reported lower self-confidence and higher levels of fatigue, aggression and social anxiety. Cabin crew who witnessed DAPB compared to those who were not involved reported higher levels of fatigue, aggression and social anxiety.
Yang & Chang (2012)	Questionnaire assessing staff competency to manage DAPB incidents	494 Taiwanese customer service workers from 3 international airlines	 Identified 17 airport-related DAPBs which were grouped into six categories: (1) Behaviour affecting the company's rights and benefits; (2) Behaviour causing services to be disrupted; (3) Enlarging the scope of the problem by causing trouble intentionally (e.g. threatening to go to the media); (4) Baggage-related; (5) Selfish, devious customers; and (6) Non-compliance with company regulations Competence of ground staff at managing DAPB differed according to airline policy, training, and supports
Vredenburgh, Zackowitz & Vredenburgh (2015)	Questionnaire assessing frequency of DAPB incidents and contributing environmental factors	245 Passengers (4 US airports)	 Confinement, discomfort and personal space were associated with anger and acting out Noise and hunger were associated with anger but not acting out 15% of passengers reported having a disagreement with fellow passengers the top three reasons for disputes involved armrests, someone reclining into the passenger's space and child kicking the seat Out of the passengers who reported a conflict, 39% sought resolution by speaking to the person disturbing them, 39% did nothing/were miserable and 19% spoke with a flight attendant

DeCelles & Norton (2016b)	DAPB database International airline (circa 2010)	Number of DAPB incidents not reported	DAPB is relatively more common: in economy class on flights with first class; in economy versus first class; on longer flights; on flights with first class cabin, and where physical design factors that highlight inequality such as front boarding through first class cabins DAPB was not related to seat width, delay length, and international/domestic flight DAPB incidents per flight estimated at 1:1000
Hu, Hu & King (2017)	Questionnaire assessing the impact of DAPB on emotional exhaustion	336 Taiwanese cabin crew	Passenger misbehaviour was directly associated with greater emotional exhaustion. It also had an impact on role stress and emotional labour which in turn were both associated with greater emotional exhaustion
Gale, Mordukhovich, Newlan & McNeely (2018)	Questionnaire assessing exposure to workplace abuse	4,549 US and Canadian cabin crew (gender combined	68.7% report sexual harassment by passenger in the past year 1.0% report sexual assault by passenger in the last year Sexual harassment in both male and female cabin crew associated with poor physical and psychological health Sexual assault in both male and female cabin crew associated with poor physical and psychological health
Tsang, Masiero & Schuckert (2018)	Questionnaire assessing passenger acceptance of unruly behaviour and impact on travel experience	298 Passengers (HK airport)	 For both Asian and non-Asian passengers: higher education long flight durations, flying business/first class, leisure as business travellers, and more frequent flyers were less tolerated of violation of personal space For both Asian and non-Asian passengers: older as business/first class (vs visiting friends/relatives) and more frequent flyers were more tolerant of aggressive acts For both Asian and non-Asian passengers: leisure as business travellers (vs visiting friends/relatives) were led disturbed by service disruption For both Asian and non-Asian passengers: low level acceptance of aggressive and violent behaviour including abut of alcohol, vandalism, foul or inappropriate language as kicking others' seat. Asian compared to non-Asian travellers less disturbed violations of personal space and disturbance to service deliver DAPB was associated with: crowding and flight delays; traver from upper South America to North America, North America to Western Europe and North America to Middle East; as flights on Tuesdays DAPB was not associated with month of travel Passenger aggression was related to situational stresses (security line waiting time, time to departure gate, number oversold seats, longest question line at counter, time passenge started to line up, weather related flight delays and non-weather related flight delays) and physiological stressors (noise, babic crying, subjective temperature, subjective crowdedness, number of passengers and employee helpfulness). The greater the situational stress the greater the employ helpfulness The level of physiological stress was not associated witemployee helpfulness
DeCelles, DeVoe, Rafaeli & Agas (2019)	DAPB database International airline (circa 2010) Observational study; passengers observed prior to boarding (30 minutes prior for domestic and 60 minutes for international flights)	Number of DAPB incidents not reported 117 Flights from US airport (35 unique destinations)	
	Questionnaire containing 3 vignettes (either a neutral, situational or physiological stressful incident)	365 US travellers (79 assigned to neutral, 156 situational, and 130 physiological experimental conditions)	 Anger and aggression ratings: situational and physiological > neutral Fear ratings: situational > physiological Situational and physiological stress were associated with higher anger which, in turn, was associated with higher aggression scores Situational stress was associated with greater fear which, in turn, was associated with greater aggression

Questions containing vignettes (neutral, stressful situationa stressful physiolog incident)	169 US Airline customer service workers	 Rating of perceived passenger fear: situational > physiological = neutral Empathy ratings: situational stressors > physiological stressors Situational stress was associated with greater perception of passenger fear which, in turn, was associated with greater service worker helpfulness Situational stress was associated with greater service worker empathy which, in turn, was associated with greater service worker helpfulness Perceived passenger anger was not related to service worker empathy or helpfulness
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Table 1. Summary of key findings from 19 included articles, presented in chronological order of publication

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